STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQO 2002 - 0015

In the Matter of the Review on Own Motion of
Waste Discharge Requirements Order No. 5-01-044
For

VACAVILLE'S EASTERLY WASTEWATER TREATMENT PLANT

Issued by the
California Regional Water Quality Control Board,
Central Valley Region

SWRCB/OCC FILE A-1375

BY THE BOARD:

The City of Vacaville (Vacaville) discharges secondary-treated effluent from its Easterly Wastewater Treatment Plant to Old Alamo Creek, an ephemeral stream that is effluent-dominated. In March 2001, the Central Valley Regional Water Quality Control Board (Central Valley Regional Board) reissued waste discharge requirements to Vacaville in Order No. 5-01-044, regulating the discharge.

Vacaville filed a timely petition with the State Water Resources Control Board (State Board or Board) to review its permit. Vacaville, joined by other municipal dischargers, also requested an evidentiary hearing. The Board accepted the petition and conducted an evidentiary hearing in September 2001. In January 2002 the Board decided to review the Vacaville permit on its own motion.

This order addresses the significant issues raised in the Vacaville petition. The order remands Order No. 5-01-044 to the Central Valley Regional Board for appropriate modifications. The order also directs the Central Valley Regional Board to expeditiously initiate amendments to the Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin (4^{th} ed. 1998) (Current Basin Plan) to consider dedesignating certain beneficial uses for Old Alamo Creek.

I. BACKGROUND

A. Effluent-Dominated or -Dependent Waters

In the arid west, natural stream flow may be very low or intermittent due to infrequent storm events and the lack of recharge from groundwater. Extensive diversions and groundwater pumping can also deplete flows. Frequently, public agencies discharge treated sewage effluent into these normally dry streams. As a result, stream flow during all or part of the year can be dominated by treated effluent. These streams, called effluent-dependent or effluent-dominated streams (EDWs), can support substantial riparian ecosystems. Discharges to them pose unique challenges for both regulators and dischargers. Unlike dischargers into flowing streams, who may be allowed dilution credits for their effluent, dischargers into dry or ephemeral streams must ordinarily meet water quality standards at the discharge point, that is, at the end of the pipe. This can lead to very stringent effluent limitations. If, due to high treatment costs, a discharger is motivated to consider removing its discharge from the stream, any aquatic and riparian ecosystems that are dependent on the effluent can be lost.

In 1991, the State Board adopted two statewide water quality control plans containing toxic pollutant water quality objectives for the state's inland surface waters and enclosed bays and estuaries.[1] In these plans, the Board attempted to address EDWs by creating a special category for them. The plans allowed a six-year time period for the adoption of site-specific objectives for EDWs before the statewide objectives would apply. The United States Environmental Protection Agency (EPA), however, disapproved these provisions, and the plans in their entirety were ultimately rescinded in response to an adverse court ruling.[2]

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[1] The plans were entitled the California Inland Surface Waters Plan and the California Enclosed Bays and Estuaries Plan.

[2] See Water Quality Control Cases, Judicial Council Coordination Proceeding No. JC2610, Sacramento County Superior Court. The Board rescinded the plans, as amended, in 1993.

In 1994, EPA and the State Board agreed to a coordinated, phased approach to re-establish water quality standards for toxic pollutants (also referred to as priority pollutants[3]) and to bring the state into compliance with Clean Water Act section 303(c)(2)(B)[4].

The first phase of the federal and state effort has been completed. In Phase 1, EPA promulgated numeric water quality criteria for priority pollutants for California in the federal California Toxics Rule (CTR).[5] The CTR supplements priority pollutant criteria previously promulgated by EPA in the National Toxics Rule (NTR).[6] Concurrent with the CTR's promulgation, the Board adopted its Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) (Toxics Policy).[7] The Toxics Policy implements the federal CTR and NTR criteria and other priority pollutant water quality objectives contained in the water quality control plans for the state's nine regions. Water quality objectives are equivalent to criteria that are adopted by EPA under Clean Water Act section 303(c).

In Phase 2, among other activities, the Board is examining whether to develop a companion policy for water quality control in EDWs. Toward this end, the Board held staff workshops in February and March 2001 to seek comments on possible alternatives for addressing EDWs.

Various dischargers requested that the Board provide guidance on interim relief for EDW dischargers pending final selection of an EDW strategy in Phase 2. They urged the Board to hear the Vacaville petition, viewing the Vacaville permit as symptomatic of the problems faced by municipal dischargers statewide that discharge to EDWs.

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[3] The priority pollutants are listed in 40 C.F.R. § 401.15.

[4] 33 U.S.C. § 1313(c)(2)(B). This section requires that the states adopt numeric criteria for all priority toxic pollutants which can reasonably be expected to interfere with the designated uses of a state's waters and for which EPA has published criteria guidance under Clean Water Act section 304 (33 U.S.C. § 1314).

[5] See 65 Fed. Reg. 31682-31719 (May 18, 2000), codified at 40 C.F.R. § 131.38.

[6] See 57 Fed. Reg. 60848-60923 (December 22, 1992), codified at 40 C.F.R. § 131.36. Criteria for about 40 priority pollutants in the NTR apply in California.

[7] See Cal. Code Regs., tit. 23, § 2914.

B. Vacaville Permit

The Vacaville treatment plant, located near Elmira, California, in Solano County, discharges effluent to Old Alamo Creek, an EDW. Old Alamo Creek is tributary to New Alamo Creek, Ulatis Creek, and Cache Slough, a tidal estuary tributary to the Sacramento River within the Sacramento-San Joaquin River Delta (Delta). The plant was initially constructed in 1959 and has been expanded several times since then. The plant provides secondary treatment, employing activated sludge reactors and secondary clarifiers with nitrification. The plant was designed for an average dry weather flow of 10 million gallons per day (mgd) and a daily peak wet weather flow of 27 mgd, with primary effluent bypass to disinfection for flows above 17 mgd. Current average flows are approximately 8.1 mgd.

Ultimately, average dry weather flows are expected to more than double to accommodate growth in the Vacaville area. The facility is currently undergoing an expansion to increase the design average dry weather flow to 15 mgd. The expanded plant, which will use the same secondary treatment process, is designed to handle a peak wet weather flow of 55 mgd, with primary effluent bypass to disinfection for flows above 39 mgd. Vacaville projects an additional plant expansion with a design average dry weather flow of 17.5 mgd by 2012 and a buildout expansion with a design average dry weather flow of 22 mgd by 2020.

The Central Valley Regional Board issued Order No. 5-01-044 to Vacaville to regulate the discharge from the Easterly treatment plant. The order both renews Vacaville's permit and accommodates the proposed plant expansion. For the first time, the Central Valley Regional Board applied the Delta's beneficial uses to Old Alamo Creek in Vacaville's permit. The assigned uses include drinking water supply (MUN), body contact recreation (REC-1), cold water aquatic habitat (COLD), and agricultural supply (AGR). Based on the assigned MUN use, the Central Valley Regional Board included human health-based effluent limits for nitrate and for CTR pollutants, including trihalomethanes. To protect the assigned REC-1 and AGR uses, the Central Valley Regional Board imposed permit limits based on tertiary treatment. The permit also prohibits Vacaville from blending primary and secondary effluent during wet weather events, a practice that was allowed in prior permits.

Because the permit contained new requirements, the Central Valley Regional Board included compliance schedules allowing Vacaville time to meet final effluent limits and the blending prohibition. The permit requires full compliance with final effluent limits for bacterial indicators and other pollutants associated with tertiary treatment by March 1, 2006. Compliance with the final trihalomethane and lindane limits is also required by that date. Full compliance with the nitrate limit is required by March 1, 2008. Interim limits, based on current treatment plant performance, are generally in effect until then.[8]

Before the Central Valley Regional Board and this Board, Vacaville contested many permit provisions, including effluent and receiving water limits that implement the assigned MUN and COLD uses, the tertiary treatment requirements, the blending prohibition, and other provisions. In May 2001, the Board granted Vacaville's request for a hearing on its petition because the petition raised issues of statewide significance. The Board was particularly interested in assessing the impacts of the CTR and Toxics Policy on a discharger to an EDW. The Board designated seven parties to the proceeding. These included the Central Valley Regional Board; Vacaville; the City of Turlock (Turlock); County Sanitation Districts of Los Angeles County (LACSD); the California Association of Sanitation Agencies, Southern California Alliance of Publicly Owned Treatment Works, and Tri-TAC, jointly; DeltaKeeper; and Heal the Bay, Santa Monica BayKeeper, San Diego BayKeeper, Orange County Coast Keeper, Ventura CoastKeeper, and Santa Barbara CoastKeeper, jointly.

The Board conducted an evidentiary hearing on the petition on September 11 through 13, 2001. On January 23, 2002, the Board adopted Order WQO-2002-0003 in which the Board decided to review the Easterly treatment plant permit on its own motion.[9] The Board conducted a site visit on February 6, 2002.

This order upholds the Central Valley Regional Board's interpretation of Current Basin Plan language that assigns beneficial uses to tributary streams. The order recognizes, however, that COLD and MUN are likely inappropriate uses for Old Alamo Creek. The order directs the Central Valley Regional Board to initiate timely amendments to the Current Basin

[8] Order No. 5-01-044 does not have interim effluent limits for lindane.

[9] See Wat. Code § 13320(a).

Plan to consider dedesignating these uses. The Board commits to assist the Central Valley Regional Board with available resources to accomplish this task, and the Board expects Vacaville to also make appropriate commitments to support the amendment process. This order also stays for a three-year period the compliance schedules in the Vacaville permit to achieve final effluent limits based on the COLD and MUN uses. In addition, the Board will assist the Central Valley Regional Board and Vacaville, if necessary, in processing a case-by-case exception for Vacaville's trihalomethane permit limits to provide additional interim relief pending an amendment of the Current Basin Plan. This order also generally upholds permit requirements for tertiary treatment and the bypass prohibition. Finally, the order remands effluent limits for nitrate, chloroform, lindane, and copper; receiving water limits for temperature and ammonia; and Groundwater Limitation E.1 to the Central Valley Regional Board for reconsideration.

II. CONTENTIONS AND FINDINGS[10]

A. Improper Designation of Beneficial Uses

The parties disagree over both the process that the Central Valley Regional Board must follow to determine Old Alamo Creek's beneficial uses as well as the existence of specific uses. Vacaville and other dischargers contend that the Central Valley Regional Board could decide the creek's uses in Vacaville's permit and that, in fact, the creek does not support COLD, MUN, and other uses. The Central Valley Regional Board and the environmental groups, on the other hand, maintain that a basin plan amendment is required to change the uses assigned to Old Alamo Creek. Until then, they argue, the uses must be protected.

Defining Old Alamo Creek's uses is critical because they serve as the basis for several contested final water quality-based effluent limitations in the Vacaville permit. In general, under the Clean Water Act and state law, the Central Valley Regional Board was

[10] Vacaville voluntarily withdrew its objection to the mercury mass limits, and the Central Valley Regional Board agreed to rescind the arsenic limits in Order No. 5-01-044. The Board, therefore, does not consider these issues. Vacaville and other parties raised many issues in this proceeding. The Board finds that the issues that are not addressed are insubstantial and not appropriate for State Board review. See *People v. Barry* (1987) 194 Cal.App.3d 158 [239 Cal.Rptr. 349]; Cal. Code Regs., tit. 23, § 2052.

required to include those effluent limits in Vacaville's permit that are necessary to achieve water quality standards, one component of which are beneficial uses.[11]

In the following discussion, the Board briefly reviews water quality standards-setting, in general, and the Central Valley Regional Board's adoption of the tributary language in its Current Basin Plan, in particular. The Board will then address the parties' specific contentions.

1. Background

Under the Clean Water Act, the states are required to adopt water quality standards for all navigable waters.[12] "Navigable waters" are expansively defined to include all "waters of the United States" in a geographical sense.[13] They include, at a minimum, all main streams and their tributaries. Tributaries are streams that contribute flow to a larger stream or other water body.[14]

Water quality standards include the designated uses for a water body and criteria to protect those uses.[15] The Clean Water Act does not require that the states designate any particular uses. Rather, in designating uses, the states must consider the waters' "use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial and other purposes . . . ."[16] Standards must also serve the Clean Water Act's goals, one of which is to, wherever attainable, "[provide] for the protection and propagation of fish, shellfish, and wildlife and . . . for recreation in and on the water . . . ."[17] These uses are referred to as "fishable/swimmable" uses.

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[11] See 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.44(d); Wat. Code §§ 13263, 13377.

[12] See 33 U.S.C. § 1313; 40 C.F.R. Part 131.

[13] 33 U.S.C. § 1362(7); see *United States v. Riverside Bayview Homes, Inc.* (1985) 474 U.S. 121, 132.

[14] *Headwaters, Inc. v. Talent Irrigation District* (9th Cir. 2001) 243 F.3d 526, 533.

[15] 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. § 131.6. Water quality standards also include an antidegradation policy. 40 C.F.R. § 131.6.

[16] 33 U.S.C. § 1313(c)(2)(A).

[17] *Id.* § 1251(a)(2).

Water quality standards regulations promulgated by EPA establish minimum requirements for use designation. All existing uses must be maintained and protected.[18] In addition, the regulations create a rebuttable presumption that all waters should be designated as fishable/swimmable.[19] A state can overcome this presumption only by demonstrating that the use is not existing and that attaining the use is not feasible based on one or more of six factors.[20] Uses are considered "existing" if they have actually occurred since November 28, 1975, or the water quality was suitable to allow the use to occur.[21] In addition, if a state designates uses that do not include the fishable/swimmable uses or removes or establishes a sub-category of these uses, the state must conduct a use attainability analysis (UAA).[22] A UAA is a structured scientific assessment of the factors affecting a use's attainment, which may include physical, chemical, biological and economic factors.[23] Water quality standards must also ensure protection of downstream standards.[24]

In California, water quality standards are found in statewide and regional water quality control plans. There are regional plans, called basin plans, for each of the state's nine regions.[25] The plans contain designated beneficial uses, water quality objectives, and an implementation program to achieve objectives.[26] Beneficial uses that may be protected include "domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves."[27]

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[18] See *PUD No. 1 of Jefferson County v. Washington Department of* Ecology (1994) 511 U.S. 700, 705; 40 C.F.R. §§ 131.6, 131.10, 131.12.

[19] *Idaho Mining Assoc., Inc. v. Browner* (D. Idaho 2000) 90 F.Supp.2d 1078, 1087-1092; see 40 C.F.R. § 131.10(j)(1).

[20] 40 C.F.R. § 131.10(g).

[21] *Id.* § 131.3(e); Water Quality Standards Handbook (2d ed. 1994) (EPA-823-B-94-005a), App. G, EPA's Questions & Answers on: Antidegradation, question 7.

[22] 40 C.F.R. § 131.10(j).

[23] *Id.* § 131.3(g).

[24] *Id.* § 131.10(b).

[25] See Wat. Code § 13050(j); 13240.

[26] *Id.* § 13050(j).

[27] *Id.* § 13050(f).

In 1975, after the Clean Water Act was enacted, the Central Valley Regional Board adopted the first version of its basin plan (1975 Basin Plan). Table 2-1 of the 1975 Plan identified beneficial uses for approximately 96 surface waterbodies. Footnote 1 to the table stated that "[t]hose streams not listed have the same beneficial uses as the streams, lakes, or reservoirs to which they are tributary." In 1989, the Central Valley Regional Board adopted the second edition of the basin plan, which was approved by the State Board in 1990 (1990 Basin Plan). The 1990 Basin Plan retained Footnote 1 unchanged. The third edition, adopted by the Central Valley Regional Board in 1994 and approved by the State Board in 1995 (1995 Basin Plan), deleted the footnote and added the following text to the beneficial use chapter:

> "The beneficial uses of any specifically identified water body generally apply to its tributary streams. In some cases a beneficial use may not be applicable to the entire body of water. In these cases the Regional Water Board's judgment will be applied. It should be noted that it is impractical to list every surface water body in the Region. For unidentified water bodies, the beneficial uses will be evaluated on a case-by-case basis."[28]

In 2000, EPA disapproved the 1995 revision.[29] EPA objected to the revision because the amended language did not clearly indicate whether the Central Valley Regional Board had adopted water quality standards that meet Clean Water Act requirements for waters within the Sacramento/San Joaquin River basins. In addition, EPA stated that the Central Valley Regional Board had failed to comply with EPA's water quality standards regulations covering the public process and justifications required to dedesignate uses previously designated under the deleted footnote. EPA concluded that, regardless of how the Central Valley Regional Board interpreted the disputed language, the Central Valley Regional Board must comply with EPA's water quality standards regulations in order to add or delete beneficial uses.

The Central Valley Regional Board submitted the 1995 Basin Plan to EPA well before May 31, 2000, the effective date of EPA's "Alaska Rule."[30] Under this rule, the disapproved 1995 Basin Plan revision remains in effect as an applicable Clean Water Act

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[28] 1995 Basin Plan, p. II-2.00.

[29] See Central Valley Regional Board Exh. 38.

[30] The Alaska rule is codified at 40 C.F.R. § 131.21.

standard unless and until EPA approves a revision to the standard or promulgates a federal replacement standard. EPA has not so acted.

Neither the Current Basin Plan nor the former editions specifically identify Old Alamo Creek's beneficial uses. The first downstream water that is identified is the Delta.[31] New Alamo Creek's confluence with Ulatis Creek, about six miles downstream from the Easterly treatment plant discharge, forms the Delta boundary. The Delta's uses include, among others, MUN, COLD, REC-1, and AGR.[32] These uses are designated as existing uses.

2. Specific Issues

a. Consistency with Current Basin Plan

Contention: Vacaville and other parties contend that the Central Valley Regional Board failed to follow the applicable tributary provisions in the Current Basin Plan. They construe these provisions to authorize the Central Valley Regional Board to essentially designate or dedesignate beneficial uses in a permit. They contend that the Central Valley Regional Board, instead, mechanically applied the now-rescinded tributary footnote to determine Old Alamo Creek's beneficial uses. Further, they contend that the Central Valley Regional Board wrongly concluded that a basin plan amendment was required to change the creek's uses.

Finding: The Board disagrees. The record clearly indicates that the Central Valley Regional Board understood that they had to apply the tributary language in the Current Basin Plan. Rather than applying the Delta's beneficial uses by rote, the Central Valley Regional Board carefully examined whether these uses were appropriate for Old Alamo Creek. The Central Valley Regional Board included detailed findings in the permit on the disputed uses and tailored permit provisions based on these findings. In so doing, the Central Valley Regional Board evaluated Old Alamo Creek's uses "on a case-by-case basis." While the Central Valley Regional Board's findings indicate that some uses, for example, COLD, are likely inappropriate, the Central Valley Regional Board reasonably concluded that a basin plan amendment was the appropriate vehicle to dedesignate Old Alamo Creek's uses.

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[31] See Central Valley Regional Board Exh. 25, Table II-1.

[32] *Ibid.* See also the Board's Water Quality Control Plan for the San Francisco Bay/Sacramento San Joaquin Delta Estuary (May 1995) (Bay-Delta Plan), ch. II.

In Order No. 5-01-044, the Central Valley Regional Board determined that the Delta's beneficial uses must be protected at the end-of-pipe discharge into Old Alamo Creek.[33] The Central Valley Regional Board based this finding on the limited dilution available in downstream waters up to the Delta boundary, on the tributary streams language in its Current Basin Plan, and on information in the record on the uses.[34] The Central Valley Regional Board treated the 1995 Basin Plan provisions on tributary streams as controlling. The Central Valley Regional Board included detailed findings on the four beneficial uses in dispute: COLD, MUN, REC-1, and AGR.[35] The Central Valley Regional Board also applied MUN to Old Alamo Creek based on Current Basin Plan language implementing the State Board's "Sources of Drinking Water policy" in Resolution No. 88-63.

In general, the Central Valley Regional Board tailored the Vacaville permit to ensure that the discharger was not in immediate noncompliance with its permit. The Central Valley Regional Board included compliance schedules in the permit for final effluent limitations or other permit provisions with which Vacaville was unable to comply.[36] The compliance schedules allow Vacaville time to submit information supporting basin plan amendments or other permit modifications. Interim effluent limits generally apply until the final compliance dates arrive in 2006 or 2008.

The Central Valley Regional Board's determination that a basin plan amendment was required to change the creek's uses was proper for several reasons. It was consistent with EPA's water quality standards regulations. The now-rescinded tributary footnote in the 1975 and 1990 Basin Plans unequivocally designated uses for unnamed tributary streams in the Delta. In fact, because the language was clear and unambiguous, the Central Valley Regional Board felt compelled to replace it in 1994 with language that was more equivocal. Having designated uses through the tributary footnote, the Central Valley Regional Board can legally dedesignate those uses, if appropriate, only in compliance with EPA's water quality standards regulations. To

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[33] Order No. 5-01-044, Finding 10.

[34] *Ibid.*

[35] *Id.* Findings 11-13 and 17.

[36] *Id.* Effluent Limitations B.1, fns. 5, 6, & 14, Provisions F.5, 8, 12, & 13.

dedesignate, the Central Valley Regional Board has to adhere to prescribed public participation requirements as well as demonstrate that the uses do not exist and cannot be feasibly attained under one of six conditions specified in the regulations.[37] Further, the Central Valley Regional Board must conduct a UAA to remove or establish a subcategory of fishable/swimmable uses, such as COLD or REC-1.[38] Thus, the current tributary language cannot be read to dedesignate the uses that had already been designated by the prior footnote.

The tributary footnote was based on the recognition that tributaries and their downstream waters are hydrologically connected. It ensured that downstream standards were met. The tributary footnote was a practical solution to the problem posed by the lack of data for all of the many surface waters in the state, the scarcity of resources required to address each individual waterbody, and the Clean Water Act requirement that the state adopt water quality standards to protect all navigable waters. There are thousands of surface waters in California. The Central Valley Regional Board estimates that, in the Central Valley alone, there are 5,800 miles of mainstream rivers and creeks and tens of thousands of miles of tributaries.

Vacaville and others contend that the now-rescinded tributary footnote did not actually designate uses and that, in any event, the Central Valley Regional Board was bound by the tributary language added to the Current Basin Plan in 1994. The parties dispute the meaning of the current language. Vacaville and other dischargers argue that it allows the Central Valley Regional Board to determine a tributary's uses in the permit. The Central Valley Regional Board interprets the language to require that the Central Valley Regional Board analyze whether a downstream water's uses apply to an affected tributary and to base permit provisions on the results of this analysis. The Central Valley Regional Board argues, however, that it must amend the Current Basin Plan to protect less than the full array of the downstream water's uses.

Arguably, the 1994 tributary language can be read to allow the Central Valley Regional Board to determine beneficial uses in a permit. Nevertheless, the Board concludes that the Central Valley Regional Board's interpretation of the Current Basin Plan is reasonable for several reasons. First, the Central Valley Regional Board's interpretation gives effect to the

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[37] See 40 C.F.R. §§ 131.10(g) & 131.20.

[38] *Id.* § 131.10(j).

language. The 1994 tributary language states that the Central Valley Regional Board will exercise its judgment in evaluating whether, presumably, all or some subset of the downstream water's beneficial uses applies to a tributary stream. The language does not actually specify the process that the Central Valley Regional Board will use to assign the uses, i.e., in a permit or through a basin plan amendment. As the language required, the Central Valley Regional Board evaluated Old Alamo Creek's uses on a case-by-case basis for the Vacaville permit. The Central Valley Regional Board included specific findings on the uses and based-permit provisions accordingly. In particular, the permit included compliance schedules allowing the discharger time to provide information supporting basin plan amendments for uses that appeared to be inappropriate. Under the prior tributary footnote, on the other hand, a downstream water's uses automatically applied to its tributaries. The footnote did not require a case-by-case analysis.

Secondly, the Central Valley Regional Board's interpretation is consistent with EPA's water quality standards regulations. The water quality standards regulations require a public process with significant public involvement to designate or dedesignate uses. The regulations impose substantive requirements for use designation and dedesignation. The regulations establish a rebuttable presumption that fishable/swimmable uses, such as COLD and REC-1, are attained and require a UAA to not designate or to designate a subcategory of these uses. Permit actions are quasi-adjudicatory and typically do not fulfill either the public participation or the substantive requirements specified in the water quality standards regulations for use designations and dedesignations. Basin planning, on the other hand, is a quasi-legislative process that is well-suited for water quality standards development.

The Central Valley Regional Board's interpretation is also consistent with state law. Under state law, a basin plan amendment is the appropriate vehicle to designate and dedesignate uses. Beneficial uses are a required component of basin plans.[39] Basin plan amendments are quasi-legislative and subject to review by the Office of Administrative Law (OAL).[40] The designation and dedesignation of uses can potentially affect a broad sector of the

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[39] Wat. Code § 13050(j).

[40] *State Water Resources Control Board v. Office of Administrative* Law (1993) 12 Cal.App.4th 697, 16 Cal.Rptr.2d 25; *United States v. State Water Resources Control Board* (1986) 182 Cal.App.3d 82, 112, 227 Cal.Rptr. 161, 176; Gov. Code § 11353.

community, including, at a minimum, all direct and indirect dischargers to the waterbody, all waterbody users, and resource agencies. A decision on a waterbody's uses applies to the waterbody as a whole, rather than to a specific permittee. Beneficial use decisions are, thus, more appropriately made in a basin planning, rather than a permit, action.

Making use determinations on a case-by-case basis in permits is fraught with problems. The state already has a permit backlog. Expanding permit actions to include use designations and dedesignations will only further exacerbate the backlog. In addition, this practice will invite EPA objections to individual permits and will further delay the permitting process. While basin plan amendments may be burdensome and time-consuming, designating and dedesignating beneficial uses in permits is potentially more so. Accordingly, the Board concludes that the Central Valley Regional Board's decision to consider use changes through the basin planning process was reasonable.

Vacaville argues, nevertheless, that the Central Valley Regional Board's interpretation of the Current Basin Plan's tributary language was erroneous because the tributary provision does not apply to constructed agricultural drains.[41] Vacaville contends that, because a downstream portion of Old Alamo Creek is channelized and receives agricultural drainage, the creek should be characterized as an agricultural drain. The Board disagrees. The Easterly treatment plant discharges into the natural channel of Alamo Creek, renamed Old Alamo Creek.[42] The fact that a downstream portion of the creek is channelized does not convert the stream into a constructed agricultural drain.

b. Reasonableness

Contention: Vacaville, Turlock and others contend that the Central Valley Regional Board acted arbitrarily and unreasonably, in violation of Water Code section 13000 and other statutes, in assigning the disputed uses to Old Alamo Creek. In particular, the parties cite

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[41] See Vacaville Exh. 48.

[42] The Board notes that Vacaville's Easterly Wastewater Treatment Plant Expansion Final Environmental Impact Report (State Clearinghouse No. 97062009, May 20, 1998) (EIR) describes Old Alamo Creek as a small natural stream. (EIR, Vol. II, p. 4.3-11 (Central Valley Regional Board Administrative Record, Vol. 4)). The EIR also states that a streambed alteration agreement from the Department of Fish and Game would be required if the project resulted in impacts to the creek. (EIR, Vol I, ch. 3.0, Att. A, p. A-36 (Central Valley Regional Board Administrative Record, Vol. 3).

statements in the record that indicate that the Central Valley Regional Board does not believe that either COLD or MUN are appropriate uses for Old Alamo Creek

Finding: The Board has concluded that the Central Valley Regional Board acted reasonably in interpreting the Current Basin Plan's tributary language. The Central Valley Regional Board also applied the language reasonably in Vacaville's permit. The permit includes compliance schedules, interim limits, and other provisions that give Vacaville time to either comply with final effluent limits based on the disputed uses or seek a basin plan amendment. The Board concludes that the Central Valley Regional Board did not go far enough, however. The Central Valley Regional Board must expeditiously initiate appropriate amendments to the Current Basin Plan to consider dedesignating COLD and MUN for Old Alamo Creek. Further, the Central Valley Regional Board may require Vacaville to assist the Central Valley Regional Board, as appropriate, in the basin plan amendment process.

In Water Code section 13000, the Legislature declared that activities and factors that may affect water quality "shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." Vacaville and others contend that the Central Valley Regional Board's actions violated this directive to be reasonable.

While basin plan provisions assigning a downstream water's uses to its upstream tributaries are valid as a general rule, their application in particular cases can lead to unreasonable results. In general, the Board agrees that, where a Regional Water Quality Control Board (Regional Board) has evidence that a designated use does not exist and likely cannot be feasibly attained, it is unreasonable to require a discharger to incur control costs to protect that use. This is true at least in the interim until the Regional Board either successfully amends the basin plan to dedesignate the use or determines that the use cannot be legally dedesignated. At a minimum, where a Regional Board has evidence that a use neither exists nor likely can be feasibly attained, the Regional Board must expeditiously initiate appropriate basin plan amendments to consider dedesignating the use.

Moreover, the Regional Board can require dischargers to the affected waterbody to provide assistance, through data collection, water quality-related investigations, or other

appropriate means, to support and expedite the basin plan amendment process.[43] In California, the discharge of waste to state waters is a privilege, not a right.[44] Dischargers who choose to dispose of their effluent in state waters have a responsibility to the waterbody that they are using for waste disposal. Waste disposal, although a reality, is not a recognized beneficial use of water.[45] Hence, a discharger who contends that specific uses are not appropriate for a water used for waste disposal has an obligation to support that assertion with the necessary studies and investigations. This should be done well before any permits are issued or reissued. If the Regional Board concurs that the disputed uses neither exist nor are likely to be feasibly attained in the future, the Regional Board is then obligated to reevaluate those uses.

In the interim, until the basin plan amendments go into effect or the Regional Board determines that the use designation cannot be changed, it is incumbent upon the Regional Board to avoid enforcing unnecessary control requirements on the discharger to protect the use. Possible avenues for interim permit relief, pending appropriate basin plan amendments, include compliance schedules and interim limits in the permit, where authorized,[46] case-by-case exceptions under the Toxics Policy for priority pollutant effluent limitations;[47] and, as a last resort, a compliance schedule with interim limits in a separate enforcement order, especially an enforcement order meeting the criteria in Water Code section 13385(j)(3). Effluent limitations subject to an enforcement order meeting the section 13385(j)(3) criteria are exempt from mandatory minimum penalties under state law.

In the Vacaville permit, the Central Valley Regional Board generally addressed the disputed beneficial uses by including compliance schedules for final effluent limitations based on the uses and, for the interim, limits based on current treatment plant performance. The

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[43] See Wat. Code §§ 13267, 13383.

[44] *Id.* § 13263(g).

[45] See *id.* § 13050(f). See also 40 C.F.R. § 131.10(a) ("In no case shall a State adopt waste transport or waste assimilation as a designated use for any waters of the United States.").

[46] The CTR and Toxics Policy allow up to a five-year compliance schedule for priority pollutant effluent limits. See 40 C.F.R. § 131.38(e); Toxics Policy, § 2.1. While the Toxics Policy also includes a longer TMDL-based schedule, EPA has not approved it, and the state must comply with the more stringent federal requirement. See 33 U.S.C. § 1370; Wat. Code §§ 13372, 13377. The Central Valley Regional Board's Current Basin Plan also allows compliance schedules of up to 10 years under certain circumstances. Current Basin Plan, IV-16.00.

[47] Toxics Policy, § 5.3.

schedules allow Vacaville time to provide information supporting a basin plan amendment to dedesignate the uses. The schedules also ensure that Vacaville is not in immediate noncompliance with its permit. One additional potential remedy for Vacaville is a case-by-case exception under the Toxics Policy for CTR pollutants, in particular, for trihalomethanes. The State Board will, if necessary, assist the Central Valley Regional Board and Vacaville in processing a case-by-case exception request for the Vacaville permit's final trihalomethane limits.

The Board stresses that, under these circumstances, the Regional Boards should not postpone reissuing permits until the basin plan amendment process is concluded. To reiterate, the Regional Boards have several permitting tools that will enable them to reissue the permits but avoid enforcing effluent limits based on uses that the Regional Boards believe are inappropriate.

For the reasons explained below, the Board concludes that MUN and COLD are likely not appropriate uses for Old Alamo Creek. The Vacaville permit includes measures that provide interim relief from final effluent limits implementing MUN and COLD; however, the ultimate remedy is a basin plan amendment dedesignating these uses. The Board will direct the Central Valley Regional Board to expeditiously initiate appropriate basin plan amendments to consider dedesignation. As the Board explains later, the State Board is prepared to assist the Central Valley Regional Board with resources to accomplish this task. The State Board also expects Vacaville to assist in this effort.

The Board has reviewed the evidence in the record on Old Alamo Creek's uses. The Board's review indicates that COLD and MUN are not existing uses. Further, it is highly unlikely that the uses can feasibly be attained in the future. On the other hand, evidence in the record supports both REC-1 and AGR. The Board analyzes the four disputed uses below.

(1) COLD

The Basin Plan defines COLD as "[u]ses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats,

vegetation, fish, shellfish (e.g., estuarine mammals, waterfowl, shorebirds)."[48] COLD is an "existing use" if the use actually occurred since November 28, 1975 or the water quality was suitable to allow the use to occur.

Evidence in the record indicates that a COLD use does not occur in Old Alamo Creek and likely cannot be attained in the future. This is due primarily to hydrologic modifications to Alamo Creek. In the 1960s the Soil Conservation Service spearheaded a flood control project for creeks within the Ulatis Creek watershed. Alamo Creek was diverted from its natural channel about two miles upstream of the Easterly treatment plant. A channel known as New Alamo Creek was constructed, extending from the southeast corner of Vacaville to Ulatis Creek. Alamo Creek's natural channel downstream of the diversion is now called Old Alamo Creek. It meanders through the eastern portion of Vacaville and along the southern side of Elmira before passing along the northern side of the treatment plant. From the treatment plant the creek continues its natural meander for about one and one-half miles downstream. From this point, Old Alamo Creek is channelized and, about one mile downstream, it discharges into the New Alamo Creek channel through four metal pipe culverts with flap gates.

The hydrologic modifications to Alamo Creek disconnected its headwaters from Old Alamo Creek. Flows from higher elevations now travel down New Alamo Creek. At the confluence of New and Old Alamo Creeks, water flows through four flap gates. These gates physically bar fish movement from New Alamo Creek to Old Alamo Creek. Further, the substrate in Old Alamo Creek, composed of sand and silt, does not provide suitable habitat for salmonid spawning. Also, Old Alamo Creek's water temperatures are probably too warm to support a COLD use. The Central Valley Regional Board concurs that a COLD use does not exist in Old Alamo Creek.

EPA's water quality standards regulations provide at least two bases on which the Central Valley Regional Board can consider dedesignating COLD. These include physical conditions, including lack of a proper substrate, and hydrologic modifications that preclude attaining the use.[49]

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[48] Central Valley Regional Board Exh. 25, II-2.00.

[49] See 40 C.F.R. § 131.10(g)(2) and (4).

The Vacaville permit includes final dissolved oxygen (DO) effluent and receiving water limits implementing the COLD use.[50] Full compliance is required when tertiary treatment facilities are completed or by March 1, 2006, whichever occurs first.[51] In the interim, the discharger must comply with a DO receiving water limit of 5.0 milligrams per liter (mg/L). The Central Valley Regional Board anticipates that Vacaville will comply with the DO limits once tertiary facilities are built.

The permit also includes final effluent limitations for biochemical oxygen demand (BOD), which are technology-based, reflecting levels achievable through tertiary treatment. These limits, together with the final DO limits, are expected to maintain receiving water DO levels of 7.0 mg/L.[52] Additionally, the permit requires the discharger to perform a downstream dissolved oxygen survey to protect the COLD use and to comply with the receiving water DO limit.[53]

If the COLD use is removed, a DO receiving water objective of 5.0 mg/L for waters designated for warm freshwater habitat (WARM) will likely apply.[54] Vacaville currently complies with this objective. Evidence in the record indicates that the Easterly treatment plant discharge has not caused the DO concentration in the receiving water to fall below 5.0 mg/L. Because the BOD limits were developed to maintain downstream DO levels, the BOD limits will, likewise, need to be reevaluated if the COLD use is removed from Old Alamo Creek.

Evidence in the record indicates that New Alamo Creek and Ulatis Creek may serve as a seasonal migration corridor for Central Valley steelhead and fall-run Chinook salmon. This evidence suggests that COLD is appropriate for New Alamo Creek at least on a seasonal basis. There is insufficient evidence in the record, however, to determine what effect, if any, the

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[50] Order No. 5-01-044, Effluent Limitation B.1 & Receiving Water Limitation D.1.

[51] *Id.* Effluent Limitation B.1, fn. 5 & Receiving Water Limitation D.1.

[52] *Id.* Finding 17.

[53] *Id.* Prov. F.6.

[54] See Central Valley Regional Board Exh. 25, III-5.00. The Current Basin Plan contains a DO receiving water objective of 7.0 mg/L for waters designated for spawning (SPWN). Applying the tributary language in the Current Basin Plan, the SPWN use would apply to Old Alamo Creek. The Central Valley Regional Board should address this use as well in the basin plan amendment mandated by this order.

Easterly treatment plant discharge has on any COLD uses for New Alamo Creek or downstream waters.

(2) MUN

The Basin Plan defines MUN as "[u]ses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply."[55] There is no evidence in the record that anyone has directly used Old Alamo Creek waters for drinking at any time. Further, the water quality of creek waters is probably not adequate to support an MUN use. There is little data in the record on receiving water quality; however, there is effluent data from 1995 through 1997. Because effluent at times comprises most of Old Alamo Creek's flows, it is appropriate to review the effluent data. The data indicate that pollutant concentrations in the Vacaville effluent, for a period preceding the CTR, did not meet applicable water quality objectives for MUN waters for nitrate and total dissolved solids (TDS) although the effluent met objectives for other chemical constituents.

Nor does it appear likely that MUN is attainable in Old Alamo Creek for the foreseeable future. Flows in Old Alamo Creek downstream of the Easterly plant consist largely of treated effluent and agricultural tailwater. Flow and quality concerns, as well as substantial public resistance to the direct reuse of effluent for drinking water purposes, will likely preclude the use. The Central Valley Regional Board, the Department of Health Services (Department), and Vacaville agree on this point. The Board, therefore, concludes that the Central Valley Regional Board must diligently pursue a basin plan amendment to consider dedesignating MUN for Old Alamo Creek.

On the other hand, MUN is clearly an existing use in the Delta. It is designated as an existing use in the Current Basin Plan.[56] In addition, Vallejo has an emergency drinking water intake in Cache Slough that was used up to 1992.

As stated for COLD above, EPA's water quality standards regulations authorize dedesignation of a designated, but not existing, use under certain circumstances if low flow conditions or hydrologic modifications preclude attaining the use. Dedesignation of MUN

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[55] *Id.* at II-1.00.

[56] *Id.*, Table II-1. See also Bay-Delta Plan, fn. 32, *supra.*

appears to be appropriate on these grounds since the hydrologic modifications to Alamo Creek have left Old Alamo Creek with flows consisting almost entirely of waste discharges.

(3) REC-1

The Basin Plan defines REC-1 as "[u]ses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible."[57] REC-1 includes wading and fishing, as well as swimming and other uses. REC-2, in contrast, refers to recreational activities involving proximity to water, but with generally no contact nor any likelihood of ingestion. These activities include, for example, picnicking, hiking, and camping. Evidence in the record, although not extensive, indicates that Old Alamo Creek waters have been used for contact recreation.

As explained above, Old Alamo Creek is the natural channel of what was previously called Alamo Creek. Both upstream of the Easterly plant and for about one and one-half miles downstream, Old Alamo Creek continues its natural meander. Downstream of the plant, Old Alamo Creek has substantial riparian cover, providing habitat for avian wildlife as well as shading the waterway. The creek runs by five homes. Central Valley Regional Board staff and others have observed evidence of contact recreation. Crayfish pots and fishing tackle, evidence of fishing, were seen along the creek. A rope swing, footpaths down to the creek, and litter were also observed along the creek. Interviews with residents indicate that wading has occurred in Old Alamo Creek.

The use is not aberrational. The public has access to the creek. The creek runs by homes, and it provides riparian habitat that would naturally attract users.

Vacaville conducted a receiving water survey from July 1997 through December 1997. The resulting report concluded that REC-1 is not an existing use of Old Alamo Creek.[58] The survey results are not credible, however, because the report ignored the results of interviews of nearby residents and because of the uneven distribution of sampling days. The survey participants did not observe anyone fishing, wading, or swimming in Old Alamo Creek. However, they did conduct interviews with nearby residents who had observed fishing and other

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[57] Central Valley Regional Board Exh. 25, II-1.00.

[58] See Central Valley Regional Board Exh. 20.

REC-1 activities on Old Alamo Creek in the recent past. In addition, the survey's sampling dates included six in the summer, five in the fall and one in the winter. The report does not explain why observations were not made during the period from January through June or in October, nor why one-third of the observations were made in September and one-fourth in December. Further, despite the claim that temperature and weather were noted for each observation, none of this data is provided.

Evidence in the record supports the conclusion that some REC-1 use has occurred at Old Alamo Creek and that REC-1 is an existing use. EPA's water quality standards regulations preclude removal of an existing use unless a use requiring more stringent criteria is added.[59] In addition, EPA's water quality standards regulations create a rebuttable presumption favoring fishable/swimmable uses, which include REC-1. Even assuming that REC-1 is not an existing use, the Central Valley Regional Board would have to do a UAA in order to not designate, dedesignate, or establish a subcategory of REC-1, such as REC-2.

(4) AGR

The Basin Plan defines AGR broadly as "[u]ses of water for farming, horticulture, or ranching including, but not limited to, irrigation (including leaching of salts), stock watering, or support of vegetation for range grazing."[60] The Central Valley Regional Board interprets this beneficial use category to include irrigation of crops for direct human consumption, referred to as "unrestricted irrigation."

It is undisputed that Old Alamo Creek waters are used for agricultural irrigation. For apparently the last ten years, creek waters have been used to irrigate feed and fodder crops and other crops not intended for direct human consumption. The record is silent on whether creek waters have been used at any point since November 28, 1975 for unrestricted irrigation. Downstream Delta waters are used for irrigation of food crops for direct human consumption, however.

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[59] 40 C.F.R. § 131.10(h)(1).

[60] Central Valley Regional Board Exh. 25, II-1.00.

Vacaville contends that soils data for the region indicate that most of the irrigated lands are restricted by soil type.[61] They argue that only higher quality soils are capable of supporting crops for direct human consumption. However, their evidence indicates that part of the Fry Ranch property that is irrigated with Old Alamo Creek waters is unrestricted for the types of crops that may be grown based on soil type. Additionally, Old Alamo Creek's channel is lined on both sides with this high quality soil.

A use is considered "existing" under EPA's water quality standards regulations if, since November 28, 1975, the use was actually realized or water quality conditions were suitable to allow the uses to occur. Evidence in the record suggests that water quality conditions protective of unrestricted AGR have been attained in Old Alamo Creek on occasion since November 28, 1975. Evidence provided by Vacaville indicates that the Easterly treatment plant discharge has achieved a total coliform concentration of 2.2 most probable number (MPN) per 100 milliliters (mL) 55 percent of the time during May through September, which coincides with the irrigation season.[62] This coliform concentration is prescribed by the Department for the direct use of recycled water for the surface irrigation of food crops.[63] Further, according to a Vacaville witness, risks associated with the Easterly plant's effluent are representative of risks associated with the creek itself.[64] Vacaville has attempted to refute this evidence with data on coliform concentrations in two other irrigation water sources, the North Bay Aqueduct and Putah South Canal.[65] The data do not indicate the coliform bacteria's origin, however. Since these waters flow through agricultural areas, it is likely that they receive significant agricultural runoff and the bacteria represent pollution from soil and livestock rather than human sources.

It is also important to note that Hastings Reclamation District 2060 obtains irrigation water from Cache Slough from a point at which the Easterly treatment plant effluent

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[61] See Vacaville Exh. 3, Figure 4.

[62] Vacaville Exh. 1C, p. 4.

[63] See Cal. Code Regs., tit. 22, §§ 60301.230 & 60304.

[64] Reporter's Transcript for September 11-13, 2001 hearing (RT), pp. 378-379.

[65] Vacaville Exh. 5, pp. 26-28.

has been found to experience 10:1 dilution or less.[66] The water has been used to irrigate crops for direct human consumption, including sweet corn, tomatoes, asparagus and grapes. As the Easterly plant continues to expand, the effluent will receive even less dilution in the receiving waters. Hence, the AGR designation for Old Alamo Creek may be necessary to ensure protection of downstream waters that are used for irrigation of food crops for direct human consumption.

c. Seasonality of Uses

Contention: Vacaville contends that the disputed uses occur, at most seasonally.

Finding: The Board has previously concluded that the Central Valley Regional Board must expeditiously initiate basin plan amendments to consider dedesignating COLD and MUN for Old Alamo Creek. There is insufficient evidence in the record to indicate whether REC-1 is a seasonal use.[67] Information provided by nearby residents in Vacaville's receiving water survey did not indicate whether there is a seasonal aspect to any recreational uses in Old Alamo Creek.

Under EPA's water quality standards regulations, the Central Valley Regional Board can adopt a subcategory of a use, such as a seasonal use.[68] However, to designate a seasonal REC-1 use in the first instance or to establish a subcategory of a previously designated REC-1 use, the Central Valley Regional Board has to do a UAA.

The AGR use is probably seasonal. The irrigation season is not likely to continue through the rainy season. Limited information in the record indicates that the Fry Ranch was

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[66] The district withdraws water from a point near the Hastings Cut, just downstream of the Vallejo intake. (Vacaville Exh. 3, Fig. 3; Central Valley Regional Board Exh. 17). Water rights records indicate that the district has withdrawn water from this point from February to November. (Central Valley Regional Board Exh. 17). Data for dilution are shown in Figure 2 of Vacaville's NPDES [National Pollutant Discharge Elimination System] Permit Application, dated May 28, 1998. (Central Valley Regional Board Administrative Record, Vol. 3). The data were taken in February 1991. At that time, the district's intake experienced less than 10:1 dilution. Dilution upstream of the intake was 4.5:1 and downstream of the intake was measured at 10:1.

[67] The Board, at Vacaville's request, takes official notice of a memorandum, dated June 7, 2002, from Ken Landau, Assistant Executive Officer, Central Valley Regional Board, to Sheila Vassey, State Board, regarding disinfection requirements. The memorandum references an attached Department letter, dated March 22, 2002, in which the Department concurs with Vacaville's proposal to provide tertiary filtration during the dry season. The Landau memorandum states that Central Valley Regional Board staff and Vacaville are amenable to seasonally-based disinfection limits.

[68] 40 C.F.R. § 131.10(c).

irrigated with Old Alamo Creek waters during 1991-1993 from May through September. The diversion and storage season for the Fry Ranch is from April 1 to September 1. Similar diversion and storage seasons are applied to agricultural water rights for downstream waters bodies. This information indicates that AGR may be a seasonal use.

d. Sources of Drinking Water Policy

Contention: Vacaville and other parties contend that the Central Valley Regional Board erred in assigning MUN to Old Alamo Creek based on Current Basin Plan provisions implementing the Sources of Drinking Water Policy (Resolution No. 88-63). They contend that Resolution No. 88-63 is invalid. They also argue that the Central Valley Regional Board wrongly concluded that a basin plan amendment is required to change the MUN designation. Alternatively, they contend that Old Alamo Creek qualifies for an exception under Resolution No. 88-63 as a system that has been modified either for the primary purpose of conveying agricultural drainage waters or to convey or treat municipal wastewater or storm waters.

Finding: The Central Valley Regional Board did not err in concluding that the Current Basin Plan provisions implementing Resolution No. 88-63 assigned MUN to Old Alamo Creek. The Central Valley Regional Board correctly determined that a basin plan amendment is required to dedesignate MUN. Old Alamo Creek does not appear to fit within Resolution No. 88-63's exceptions for systems that are modified for the primary purpose of conveying agricultural drainage waters or to convey or treat municipal wastewater or storm waters. Nevertheless, the Board concludes that a site-specific exception to Resolution No. 88-63 for Old Alamo Creek may be appropriate.

The State Board adopted a state policy for water quality control known as the Sources of Drinking Water Policy in 1988. In it the Board resolved that "[a]ll surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or

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domestic water supply and should be so designated by the Central Valley Regional Boards" with certain exceptions. The exceptions include, among others:

> "1. Surface and ground waters where:
>
> c. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.
>
> 2. Surface waters where:
>
> a. The water is in systems designed or modified to collect or treat municipal . . . wastewaters, . . . or storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Central Valley Regional Boards; or,
>
> b. The water is in systems designed or modified for the primary purpose of conveying or holding agricultural drainage waters, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Central Valley Regional Boards."

The Central Valley Regional Board modified its Basin Plan in 1989 to implement Resolution No. 88-63. The amendment added language stating that water bodies within the region "that do not have beneficial uses designated" in the tables identifying specific waters and their uses "are assigned MUN designations in accordance with the provisions of . . . Resolution No. 88-63 . . . ."[69] The resolution was made a part of the 1990 Basin Plan.

Shortly thereafter, OAL issued a determination that the Sources of Drinking Water Policy contained regulatory language and, therefore, must be adopted pursuant to the rulemaking provisions of the Administrative Procedure Act (APA).[70] This determination was advisory only. At that time OAL and the State Board had an ongoing dispute over whether basin plans, state policies for water quality control, and guidelines were subject to the APA's rulemaking provisions. After an adverse ruling in litigation, the Board decided to pursue a

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[69] See 1990 Basin Plan, II-1.

[70] Gov. Code § 11340 et seq.; 1989 OAL Determination No. 8 [Docket No. 88-010].

legislative remedy.[71] The matter was ultimately resolved by legislation enacted in 1992 amending the APA.[72] The amendments establish an abbreviated OAL review process for plans, policies, and guidelines that are adopted or that a court determines are subject to the APA after June 1, 1992. The legislation explicitly exempts plan, policies and guidelines adopted or revised prior to that date from the APA's rulemaking provisions.[73]

The State Board adopted Resolution No. 88-63 and the Central Valley Regional Board amended the 1975 Basin Plan to implement the policy well before June 1, 1992. No court actions were filed over either Resolution No. 88-63 or the 1989 Basin Plan amendments implementing the policy. Hence, both Resolution No. 88-63 and the implementing Basin Plan amendments are exempt from the APA's rulemaking provisions.

Vacaville and others contend that the Central Valley Regional Board can apply Resolution No. 88-63's exceptions provisions without amending the Current Basin Plan. To support this contention, Vacaville cites documents addressing prior draft versions of Resolution No. 88-63.[74] Resolution No. 88-63, as adopted by the Board, differs significantly from the prior draft versions; consequently, documents relating to the prior drafts are not persuasive. In fact, the State Board anticipated that the Regional Boards would apply the exception criteria through a basin plan amendment designating uses for a specific waterbody that did not include MUN.[75]

As LACSD correctly points out, Resolution No. 88-63 did not itself designate uses for any waterbody. Rather, the resolution established a state policy that the Regional Boards were required to implement in their basin plans. The Central Valley Regional Board chose to implement Resolution No. 88-63 through a blanket MUN designation for all unidentified waterbodies in the region. Having made the designation, the Central Valley Regional Board is now required to go through another rulemaking process to change the designation. Thus, the Central Valley Regional Board correctly concluded that a basin plan amendment is required to change the MUN designation for Old Alamo Creek.

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[71] See *State Water Resources Control Board v. Office of Administrative Law*, fn. 40, *supra*.

[72] Stats. 1992, ch. 1112, codified in Gov. Code §§ 11352-11354.

[73] Gov. Code § 11353(a) & (b).

[74] Vacaville Exh. 31.

[75] State Board Resolution No. 89-75.

While the Board concludes that the Central Valley Regional Board effectively designated MUN for Old Alamo Creek in 1988 in accordance with Resolution No. 88-63, the State Board also concludes that a site-specific amendment to the resolution for Old Alamo Creek may be appropriate. None of the existing exception categories in Resolution No. 88-63 appear to directly apply to the creek.

Exception 1.c does not apply because Old Alamo Creek flows downstream from the treatment plant exceed 200 gallons per day. Vacaville contends that exceptions 2.a. and 2.b. apply to Old Alamo Creek. Old Alamo Creek does not appear to fit these exceptions either, however. Both exceptions address systems that are designed or modified for the primary purpose of conveying agricultural drainage or to collect or treat municipal wastewater or storm water. Old Alamo Creek was neither designed nor modified to be an agricultural drain. As explained above, the Soil Conservation Service constructed the New Alamo Creek channel in the 1960s to control flooding in the Ulatis Creek drainage. Part of Old Alamo Creek downstream from the treatment plant was also straightened to control flooding. It is important to note that the section of Old Alamo Creek into which the Easterly treatment plant discharges was not significantly modified. In particular, although the creek, like all waterbodies, receives storm water runoff, it does not appear that the creek was modified to convey or treat municipal wastewater or storm water.

Although the exceptions do not clearly fit Old Alamo Creek, the Board also concludes that, due to the hydrologic modifications to Alamo Creek, MUN does not appear to be an appropriate beneficial use for Old Alamo Creek. All of Alamo Creek's natural flow has been diverted; consequently, Old Alamo Creek's flows now consist almost entirely of waste discharges. Therefore, if the Central Valley Regional Board amends its Current Basin Plan to dedesignate MUN for Old Alamo Creek, the Board will consider amending Resolution No. 88-63 concurrently with Board action on the basin plan amendment to specifically exempt Old Alamo Creek.

3. Summary

In sum, the Board has concluded that the Central Valley Regional Board reasonably interpreted the tributary language in the Current Basin Plan to assign MUN, COLD, AGR, and REC-1 uses to Old Alamo Creek. Likewise, the Central Valley Regional Board properly concluded that MUN was previously designated for Old Alamo Creek in order to implement Resolution No. 88-63. The Central Valley Regional Board reasonably determined that a basin plan amendment was the proper way to change the creek's uses. Evidence in the record indicates that, in fact, COLD and MUN are likely not appropriate for Old Alamo Creek. The evidence indicates that the AGR use is probably seasonal; however, no conclusions can be drawn regarding the seasonality of the REC-1 use.

To address the inappropriate use designations, the Central Valley Regional Board must promptly initiate amendments to consider dedesignating COLD and MUN for Old Alamo Creek. If Vacaville provides supporting evidence, the Central Valley Regional Board should also consider whether Old Alamo Creeks' AGR and REC-1 uses should be subcategorized as seasonal uses. The Board expects Vacaville to make appropriate commitments to support and expedite the Central Valley Regional Board's basin planning activities in these areas.

The Central Valley Regional Board has included provisions in the Vacaville permit that allow time for appropriate basin plan amendments and that ensure that Vacaville can comply with its permit in the interim. In addition to these measures, the State Board will stay for a three-year period the compliance schedules in the permit for final effluent limits based on the COLD and MUN uses. Also, the Board will , if necessary, assist the Central Valley Regional Board and Vacaville in seeking a case-by-case exception under the Toxics Policy for the final trihalomethane limits in Order No. 5-01-044.

In reaching these conclusions, the Board does not mean to imply that the Regional Boards must reevaluate beneficial uses every time a permit is reissued or a discharger contends that a use is inappropriate. The Board has concluded here that the Central Valley Regional Board must reevaluate COLD and MUN for several reasons. Of greatest significance is the fact that Central Valley Regional Board staff considered the uses and concluded that they did not exist and were highly unlikely to exist in the future. These conclusions were supported by

uncontradicted evidence in the record. Under these circumstances, the Central Valley Regional Board is required to go forward with basin plan amendment proceedings to consider dedesignating COLD and MUN concurrently with permit reissuance.

Conversely, the receiving water survey submitted by Vacaville to support the conclusion that REC-1 does not exist actually supports the conclusion that some REC-1 use does occur. This evidence was not sufficient to overcome the rebuttable presumption established in the EPA regulations that REC-1 does exist. Similarly, evidence in the record indicates that agricultural irrigation occurs, and there is no persuasive evidence indicating that Old Alamo Creek waters cannot feasibly be used for unrestricted irrigation. Hence, the Central Valley Regional Board was not obligated to reconsider the REC-1 and AGR uses as part of permit reissuance. The Central Valley Regional Board can unquestionably reconsider these uses, including whether the uses are seasonal, at any time. However, the Central Valley Regional Board can set its own priorities for reevaluating these uses, if the Central Valley Regional Board chooses to do so.

B. Tertiary Treatment

In Order No. 5-01-044 the Central Valley Regional Board required Vacaville to include "tertiary treatment capabilities" for pathogen removal at the Easterly treatment plant by March 1, 2006, to protect Old Alamo Creek's REC-1 and AGR uses.[76] This requirement implemented a Department recommendation on the appropriate level of pathogen removal for the Easterly effluent. The Department recommended tertiary treatment based on the receiving waters' limited dilution, ranging from 1:1 to 6:4, and their potential use for body contact recreation and irrigation of food crops that can be eaten fresh.[77] Where wastewater is discharged to receiving waters identified as supporting these uses, but the wastewater receives greater than 20:1 dilution, the Department recommended only that the wastewater be oxidized and disinfected.[78]

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[76] Order No. 5-01-044, Provision F.5.

[77] Central Valley Regional Board Exh. 28.

[78] Central Valley Regional Board Exh. 30.

The Central Valley Regional Board found that tertiary treatment was appropriate because effluent from the plant receives less than 20:1 dilution well into the Delta.[79] The Central Valley Regional Board allowed Vacaville to demonstrate that the receiving waters at times provide a 20:1 minimum dilution and that tertiary treatment is unnecessary during those times.[80] The permit prescribes final effluent limits for coliform and turbidity that serve as indicators of the effectiveness of the tertiary treatment train in removing pathogens.[81]

Vacaville and other parties object to the tertiary treatment requirements on several grounds. They contend that the requirements are inconsistent with the Current Basin Plan, are improperly based on disinfection guidelines or reclamation criteria, violate Water Code section 13360, and are inconsistent with the Clean Water Act. Their contentions are discussed below.

1. Current Basin Plan Objective

Contention: Vacaville contends that the Central Valley Regional Board failed to justify imposing bacteriological requirements more stringent than limits derived from the applicable Current Basin Plan objective for fecal coliform. Vacaville additionally contends that the Central Valley Regional Board failed to consider the factors in Water Code section 13241[82] prior to imposing the more stringent bacteriological standards.

Finding: The Central Valley Regional Board could legally impose bacteriological limits more stringent than limits implementing the Current Basin Plan objective. These limits were justified to protect Old Alamo Creek's AGR and REC-1 uses. Although the record clearly indicates that the Central Valley Regional Board considered economics when it adopted the more stringent limits, the Vacaville permit does not contain express findings on the other section 13241 factors. The Board will remand the permit to the Central Valley Regional Board to revise the permit findings.

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[79] Order No. 5-01-044, Finding 14.

[80] *Id.* Finding 14 & Provision F.5.

[81] *Id.* Finding 14 & Effluent Limitation B.1.

[82] See fn. 97, *infra.*

The Current Basin Plan specifies a minimum level of bacterial quality for REC-1 waters.[83] The fecal coliform concentration in these waters, based on not less than five samples for any 30-day period, cannot exceed a geometric mean of 200 MPN/100 mL, nor shall more than ten percent of all samples during any 30-day period exceed 400 MPN/100 mL. This objective was based on a 1976 EPA water quality criteria guidance document that EPA developed after conducting studies in the late 1940's and early 1950's at several public bathing beaches.[84]

The State Board has held that a Regional Board may impose effluent limits that are more stringent than limits implementing an applicable water quality objective where necessary to protect beneficial uses or prevent nuisance.[85] Permits must include any more stringent effluent limitations necessary to attain and maintain standards, and standards include both beneficial uses as well as criteria or objectives.[86] Even where a basin plan includes a specific objective for a pollutant, the Regional Board is not limited to enforcing the objective but may also enforce the use.[87]

The Central Valley Regional Board determined that the Current Basin Plan's fecal coliform objective was not adequate to protect the REC-1 and AGR uses of Old Alamo Creek and downstream waters. The Board agrees. The Current Basin Plan objective uses fecal coliform densities as an indicator of bacterial water quality. The objective applies to receiving waters and takes into account both animal and human fecal coliform sources. Hence, the objective may underestimate risk in situations where, as here, the great majority of fecal coliforms are of human origin. Fecal coliform organisms in receiving waters do not necessarily indicate that human pathogens are present. On the other hand, fecal coliform organisms in undiluted sewage effluent are undoubtedly of human origin and a stronger indicator of human

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[83] Central Valley Regional Board Exh. 25, III-3.00.

[84] In 1986 EPA published revised bacteria criteria guidance. Ambient Water Quality Criteria for Bacteria – 1986 (EPA440/5-84-002).

[85] See, e.g., State Board Order WQ 95-4 at 12-13.

[86] See *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, fn. 18, *supra*, 511 U.S. at 714-715; 33 U.S.C. §§ 1311(b)(2)(C), 1342; Wat. Code §§ 13372, 13377, 13263.

[87] See *PUD No. 1 of Jefferson County v. Washington Department of Ecology,* fn. 18, *supra.*

pathogens. When the receiving waters consist largely or entirely of effluent, the basin plan objective is not sufficiently protective.

This is the case here. Evidence in the record indicates that Old Alamo Creek upstream of the treatment plant has no flow for much of the year. The wastewater remains largely undiluted for a significant distance downstream. From the discharge point, effluent flows for about one and one-half miles before receiving agricultural tailwater inflows. Dilution measured just downstream of the New Alamo Creek-Ulatis Creek confluence, at the Delta boundary, has been measured as low as 0.9:1. Dilution at the Ulatis Creek-Cache Slough confluence about 12.2 miles downstream was measured as low as 4.5:1 at an effluent flow of 6.9 mgd. These dilutions will decline as effluent flows increase and in drought conditions. The treatment plant is currently rated for 10 mgd average dry weather flow. The current expansion will increase the design average dry weather flow to 15 mgd. Further, effluent flows are projected to more than double by 2020.

In lieu of imposing effluent limits based on the Current Basin Plan objective, the Central Valley Regional Board sought the Department's recommendation on the appropriate treatment level to protect the REC-1 and AGR uses of Old Alamo Creek and downstream waters. The Department recommended a tertiary treatment train "where relatively undiluted wastewater" is discharged to creeks identified by the Central Valley Regional Board as supporting REC-1 or unrestricted irrigation.[88] The Department's recommendations were consistent with its water recycling criteria. The criteria, in general, require tertiary treatment where recycled water is used as a water supply source for a nonrestricted recreational impoundment.[89] Tertiary treatment is also required for recycled water used for the surface irrigation of food crops.[90] The Department's recycled water criteria do not attempt to quantify a numerical health risk goal that will be achieved by providing varying degrees of treatment. Rather, the criteria specify the tertiary treatment train because the resulting effluent will be essentially free of measurable pathogens. Tertiary treatment produces an effluent with the lowest detectable concentration of indicator

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[88] See Central Valley Regional Board Exh. 30.

[89] See Cal. Code Regs., tit. 22, § 22-60305.

[90] *See id.* § 60304.

organisms (2.2 MPN/100 mL total coliform) and a turbidity level (2 NTU) that ensures pathogen removal.

A Department representative testified at this Board's hearing that the public health risk level on which the Current Basin Plan's fecal coliform objective was based is very high and is not considered an appropriate risk goal for setting waste discharge requirements.[91] Similarly, the representative stated that Vacaville's risk assessment was based on a risk goal that is higher than the Department's recommended risk level.[92] Tertiary treatment is not intended to provide a specific risk level. Rather, it is technology-based and is designed to protect the public from illness related to pathogens by ensuring their removal from effluent. By imposing coliform and turbidity limits based on tertiary treatment, the Central Valley Regional Board was providing downstream residents and growers appropriate protection.

The Central Valley Regional Board properly relied on the Department's expertise in establishing disinfection requirements for the Easterly discharge. The Department is the state agency charged with the statutory responsibility to protect public health.[93] In public health matters, the Board believes that "[c]onservatism in the direction of high quality" should guide the Central Valley Regional Board and that a "margin of safety must be maintained to assure the protection of all beneficial uses."[94]

Conservatism regarding bacterial water quality is particularly appropriate given the uncertainties associated with assessing the safety of water from a public health standpoint. As stated in the testimony of a LACSD expert witness, Dr. Harvey Collins, "[l]aboratory analyses capable of detecting low levels of viable bacterial and viral pathogens are very limited, as are the procedures for the detection of pathogenic protozoa *Cryptosporidium parvum* and *Giardia lamblia*."[95] Further, "[t]hese limitations in scientific technology have prevented many in

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[91] RT, fn. 64 *supra*, p. 512.

[92] *Ibid.*

[93] See generally Health & Saf. Code § 100100 et seq.

[94] Recommended Changes in Water Quality Control, Final Report of the Study Panel to the [State Board], Study Project, Water Quality Control Program, at 15 (1969). The Porter-Cologne Water Quality Control Act, Water Code section 13000 et seq., is intended to implement the recommendations of this report. Stats. 1969, ch. 482, § 36, at 1088.

[95] LACSD, Exh. A, p. 5.

the scientific and technical community from making statements about the safety of a water supply . . . ."[96] Human wastewater is known to contain numerous pathogenic organisms far too variable and poorly characterized to quantify on a regular basis. Given these uncertainties, the Central Valley Regional Board was justified in requiring that the Easterly plant achieve bacteriological limits more stringent than limits based on the Current Basin Plan's fecal coliform objective.

While the Board concludes that the Central Valley Regional Board could legally impose bacteriological limits more stringent than limits based on the Current Basin Plan fecal coliform objective, the Board also concludes that the Vacaville permit's findings do not adequately address the Water Code section 13241 factors. This Board has previously held that when a Regional Board includes permit limits more stringent than limits based on an applicable numeric objective in the relevant basin plan, the Regional Board must address the section 13241 factors in the permit findings.[97] These factors include, among others, economic considerations, environmental characteristics of the hydrographic unit under consideration, and the need for recycled water. The Vacaville permit contains a permit finding on the potential costs of advanced treatment to achieve the more stringent bacteriological limits.[98] The permit does not, however, expressly address the other factors. The Board will direct the Central Valley Regional Board to revise the findings, as necessary, on remand to address this deficiency.

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[96] *Ibid.*

[97] See, e.g., State Board Orders WQ 94-8, 95-4, 2001-16. Section 13241 requires that the Regional Boards consider the following factors when adopting water quality objectives:

(a) Past, present, and probable future beneficial uses of water.

(b) Environmental characteristics of the hydrographic unit under consideration, including the quality of available water.

(c) Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality.

(d) Economic considerations.

(e) The need for developing housing within the region.

(f) The need to develop and use recycled water.

[98] See Order No. 5-01-044, Finding 14.

2. Disinfection Guidelines

Contention: Vacaville contends that the Central Valley Regional Board improperly based the tertiary treatment requirements on the Department's disinfection guidelines. Vacaville objects because the Central Valley Regional Board has not adopted the guidelines as regulations. Vacaville further contends that the guidelines, in any event, do not justify tertiary treatment for the Easterly treatment plant effluent.

Finding: As stated previously, the Central Valley Regional Board based the tertiary treatment requirement on the Department's recommendation and the facts specific to the Easterly discharge. Although the Department's disinfection guidelines are not binding, the Easterly plant discharge, nevertheless, meets the criteria in the guidelines for a discharge needing tertiary treatment.

The Department, in general, uses disinfection guidelines to make recommendations to the Regional Boards on appropriate treatment levels to protect public health. The guidelines are not binding. The Central Valley Regional Board's decision to require tertiary treatment for the Vacaville discharge is consistent with the Department's disinfection guidelines. Category II. C. covers discharges to streams with a REC-1 beneficial use meeting most of the following conditions:

1. The discharge occurs in, or upstream from, a residential area.

2. There is ready access to the discharged wastewater, and exclusion of the public is not a realistic alternative.

3. Historical attempts to post the stream to warn and exclude the public have been unsuccessful.

4. The recreation potential in the stream is high and justified because of weather, proximity to other recreation areas, or other factors.

5. There is public interest in recreational use of the water.

Of these factors, at least three and possibly four are met. Evidence of nearby housing is in the record. As part of a Central Valley Regional Board receiving water survey, photographs were taken of one of the homes located on the creek bank. This is the same location where a crayfish trap and fishing tackle were observed. Vacaville's receiving water survey also indicates that there were several residents living near or along the creek.

Old Alamo Creek and downstream waters are readily accessible and excluding the public is not a reasonable alternative. At least one home is located on the creek banks. Restricting access here is not feasible. Near the residential area there is vegetation along the creek, which may impede but does not preclude public access. Farther downstream, all vegetation is controlled and removed. Access in this area is unimpeded. Further, there is no evidence in the record of any attempts to post the creek to warn and exclude the public.

Old Alamo Creek provides the closest recreational area for people on foot or bicycle in the Elmira area. Evidence in the record indicates that Old Alamo Creek and downstream waters are used for recreation, including wading and fishing. Two of four residents interviewed as part of Vacaville's receiving water survey had observed wading and fishing in the creek. One resident stated that her son sets crayfish traps along the creek.

The above information indicates that Old Alamo Creek is a Category II.C. water. The Department's guidelines recommend that discharges to this category waterbody be adequately oxidized, coagulated, filtered and disinfected to achieve a median MPN of 2.2 total coliform/100 mL.

3. Water Code Section 13360

Contention: Vacaville and other parties contend that the Central Valley Regional Board violated Water Code section 13360 in Order No. 5-01-044 by requiring Vacaville to achieve tertiary treatment capabilities.

Finding: Order No. 5-01-044 requires that Vacaville achieve tertiary treatment capabilities in order to meet specified coliform and turbidity limits. The Board remands the permit to the Central Valley Regional Board to define "tertiary treatment capabilities" to ensure that it includes alternative treatment processes beyond secondary treatment that can achieve the coliform and turbidity limits.

Under section 13360, a Central Valley Regional Board cannot "specify the design, location, type of construction, or particular manner in which" a discharger may comply with a permit. The discharger must be allowed to comply with the permit in any lawful manner. The statute is not violated, however, when a Regional Board imposes a discharge standard that may be met in only one manner. "Where the lack of available alternatives is a constraint

imposed by present technology and the laws of nature" rather than a permit requirement specifying the manner of compliance, there is no violation of section 13360.[99]

Order No. 5-01-044 requires that the discharger achieve tertiary treatment capabilities but does not define this term. Oxidation, coagulation, and filtration are commonly referred to as tertiary treatment. To ensure consistency with section 13360, the Board concludes that the Central Valley Regional Board must define the term "tertiary treatment capabilities". Further, the Central Valley Regional Board must clarify that tertiary treatment can include any alternative treatment processes beyond secondary that can achieve the coliform and turbidity limits.

The State Board has previously considered this issue. In Order WQ 80-19 the Board held that a permit requirement mandating filtration or an equivalent treatment process to achieve coliform and turbidity limits did not violate section 13360.

4. Clean Water Act and Water Code Sections 13263(a) and 13377

Contention: Turlock contends that the Central Valley Regional Board violated the Clean Water Act and state law by requiring Vacaville to exceed secondary treatment requirements. Turlock further contends that the Central Valley Regional Board violated state law by imposing treatment requirements that are not expressly authorized under state law or the Current Basin Plan.

Finding: The Central Valley Regional Board did not violate either the Clean Water Act or state law in requiring Vacaville to achieve tertiary treatment.

The Clean Water Act, with certain exceptions, requires that all publicly-owned treatment works (POTWs) achieve secondary treatment, as defined by EPA.[100] Turlock argues that the Central Valley Regional Board could require advanced treatment beyond secondary only upon completion of an appropriate total maximum daily load (TMDL), presumably for pathogens. The states must develop TMDLs for all waters on the states' current Clean Water Act section 303(d) list of waters that are impaired for specific pollutants.[101] A TMDL expresses

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[99] *Tahoe-Sierra Preservation Council v. State Water Resources Control Board* (1989) 210 Cal.App.3d 1421, 1438, 259 Cal.Rptr. 132, 144.

[100] 33 U.S.C. § 1311(b)(1)(B); see 40 C.F.R. Part 133.

[101] See 33 U.S.C. § 1313(d).

quantitatively the amount of pollutant load, with a margin of safety, that ensures that a water body attains and maintains water quality standards.[102]

Since Old Alamo Creek is not listed as impaired on the state's current section 303(d) list, no TMDL is scheduled. Under Turlock's reasoning, the Central Valley Regional Board cannot impose effluent limits to ensure that beneficial uses are protected until Old Alamo Creek or downstream waters are both sufficiently impaired to be on the 303(d) list and subject to a TMDL. In other words, the Central Valley Regional Board must sit idly by and let the creeks' water quality deteriorate to the point that a TMDL is required. The Board declines to read the Clean Water Act in this manner.

The Central Valley Regional Board included tertiary treatment requirements in Vacaville's permit to implement water quality standards for REC-1 and AGR. The State Board has previously rejected arguments that POTW permits, in contrast to industrial permits, cannot legally include effluent limits implementing water quality standards, absent a TMDL.[103] Even if the Clean Water Act could be interpreted as proposed by Turlock, however, this erroneous interpretation does not circumscribe the state's authority to regulate. The state's authority "is not specifically derived from the Federal Act nor was it created solely to carry out the identical pollution regulating function . . . ."[104] Rather, it is part of a broad state legislative scheme that predated the Clean Water Act and that included regulation of dischargers such as Vacaville. State law clearly requires that permits, including those issued to POTWs, implement water quality standards.[105] Further, the Clean Water Act unequivocally allows the states to impose more stringent requirements in permits than the minimum federal requirements.[106]

The tertiary treatment requirement clearly is consistent with state law. The Water Code requires that NPDES permits ensure compliance with "any more stringent effluent standards or limitations necessary to implement water quality control plans, or for the protection

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[102] See *ibid.*; 40 C.F.R. § 130.2(i).

[103] See State Board Order WQ 2001-16 at 12-16.

[104] *Southern California Edison Company v. State Water Resources Control Board* (1981) 116 Cal.App.3d 751, 758, 172 Cal.Rptr. 306.

[105] See Wat. Code §§ 13263, 13377.

[106] 33 U.S.C. § 1370; *Southern California Edison Company v. State Water Resources Control Board*, fn. 104, *supra*, 116 Cal.App.3d at 758-759.

of beneficial uses, or to prevent nuisance."[107] The Central Valley Regional Board properly determined that the tertiary treatment train is necessary to protect the REC-1 and AGR uses of Old Alamo Creek and downstream waters. The requirement is also necessary to implement antidegradation requirements, which are part of the state's water quality standards.[108] Antidegradation requirements mandate that all existing instream beneficial uses, which include REC-1, be maintained and protected.[109] Thus, the Central Valley Regional Board was required maintain and protect the REC-1 use of Old Alamo Creek and downstream waters.

C. Blending

The Easterly treatment plant was designed for 10 mgd average dry weather flow and 27 mgd daily peak wet weather flow. When flows exceed 17 mgd, the excess flows over 17 mgd are routed around the secondary biological treatment units after primary treatment and then blended with effluent that has received both primary and secondary treatment before discharge. The expanded plant is rated for 15 mgd average dry weather flow and 55 mgd peak wet weather flow with effluent bypass for flows over 39 mgd. Vacaville anticipates phasing out the bypass with the expansion anticipated for 2020.

The prior Vacaville permits authorized bypass. The current permit prohibits it. Because Vacaville cannot currently comply with the prohibition, the permit includes a compliance schedule to phase out bypass by March 1, 2006. In the interim, Vacaville must reduce infiltration and inflow to its collection system to the extent possible. If Vacaville submits new information to the Central Valley Regional Board demonstrating that the wet-weather bypass meets the bypass prohibition in the federal NPDES permit regulations, the Central Valley Regional Board may reopen the permit to reconsider the prohibition.

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[107] Wat. Code § 13377.

[108] See 40 C.F.R. §§ 131.6 & 131.12; State Board Order WQ 86-17; State Board Res. 68-16.

[109] 40 C.F.R. § 131.12(a)(1); *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, fn. 18, *supra.*

1. Water Code Section 13263(a)

Contention: Vacaville contends that the bypass prohibition is not supported by evidence in the record and appropriate findings on the Water Code section 13241 factors.[110] Vacaville's particularly focuses on the costs that Vacaville will incur to comply with the prohibition. Vacaville asks the Board to find that the prohibition is unreasonable.

Finding: With one exception, the federal permit regulations prohibit bypass.[111] The Water Code and implementing state regulations likewise prohibit bypass. The Central Valley Regional Board was not required to consider the section 13241 factors when it adopted the prohibition. The Central Valley Regional Board implemented the bypass prohibition in a reasonable manner.

The Clean Water Act generally requires that all POTWs achieve secondary treatment and authorizes EPA to impose conditions to ensure that POTWs comply with this requirement.[112] One condition is the bypass prohibition. With one exception, the federal permit regulations prohibit bypass, which is defined as the intentional diversion of waste streams from any portion of a treatment facility.[113] The provision requires a permittee to operate its entire treatment facility at all times. An exception is made for bypasses that are "for essential maintenance to assure efficient operation" and that do not cause effluent limits to be exceeded.[114]

The regulation further provides that the permit authority may take enforcement action against a discharger for bypass unless:

(1) the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) there are no feasible alternatives to the bypass; and

(3) the permittee submitted the required notices.[115]

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[110] See fn. 97, *supra.*.

[111] See 40 C.F.R. § 122.41(m).

[112] See 33 U.S.C. §§ 1311(b)(1)(B) & 1342(a)(2).

[113] 40 C.F.R. § 122.41(m)(1).

[114] *Id.* § 122.41(m)(2).

[115] *Id.* § 122.41(m)(4).

The permit authority may approve an anticipated bypass, after considering its adverse effects, if the authority finds that it will meet the three criteria.[116]

The Legislature added Chapter 5.5 to Division 7 of the Water Code in 1972 to authorize the state to administer the NPDES permit program established in section 402 of the Clean Water Act.[117] The chapter must be construed to assure consistency with requirements for state programs implementing the Clean Water Act.[118] Those requirements mandate that NPDES permits include the bypass prohibition.[119] The State Board has implemented Chapter 5.5 in state permitting regulations. The regulations similarly require that all NPDES permits be issued and administered in accordance with the federal permit regulations, which mandate the bypass prohibition.[120]

Vacaville's existing blending practice is not for "essential maintenance." Generally, maintenance "is that which is necessary to maintain the performance, removal efficiency and effluent quality of the pollution control equipment."[121] It includes, for example, recommended maintenance procedures contained in the operation and maintenance manual for a facility and maintenance advised by the design engineer. It can include necessary repairs. On the other hand, a bypass to avoid hydraulic flooding resulting from heavy rainfall falls in the second category, i.e. a bypass that is "unavoidable to prevent . . . severe property damage." In addition, as the Board explains later, it is not entirely clear that Vacaville can meet all of its effluent limits during bypass events.[122]

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[116] *Ibid.*

[117] 33 U.S.C. § 1342; see Wat. Code § 13370.

[118] Wat. Code § 13372

[119] See 40 C.F.R. §§ 123.25(a)(12); 122.41(m).

[120] See Cal. Code Regs., tit. 23, § 2235.2.

[121] 49 Fed. Reg. 37998, 38037 (Sept. 26, 1984).

[122] CASA argues that the Board should follow the approach taken by the San Francisco Bay Regional Board in permits issued to the East Bay Dischargers Authority and East Bay Municipal Utility District in Orders Nos. 00-087 and 01-072, respectively, of which the Board takes official notice. Both permits authorize blending; however, the discharges are not comparable to the Vacaville discharge. Both discharges receive a minimum of 10:1 dilution and an average dilution of 45:1. In addition, both permits authorize bypass only if the blended effluent complies with all effluent and receiving water limits.

In Order 5-01-044 the Central Valley Regional Board found that Vacaville didn't meet the second criteria for an unavoidable bypass, that is, that there are "no feasible alternatives". The phrase has been interpreted to include the construction of wastewater storage units to handle peak flows.[123] Vacaville has not yet constructed storage or equalization basins to handle wet weather flows. The discharger has also not completed improvements to its collection system to reduce infiltration and inflow. Under these circumstances, the Central Valley Regional Board did not abuse its discretion in concluding that Vacaville's blending practice did not meet the conditions for an unavoidable bypass.

The Central Valley Regional Board did not violate Water Code section 13263(a) by failing to consider the section 13241 factors in imposing the bypass prohibition. Vacaville principally objects to the Central Valley Regional Board's failure to consider Vacaville's costs to comply with the bypass prohibition.

The permit was issued under Chapter 5.5. The Central Valley Regional Board had to include the bypass prohibition as a minimum federal permit requirement. The Central Valley Regional Board lacked the discretion to authorize a bypass in violation of the bypass regulation in 40 C.F.R. section 122.41(m). To the extent, if any, that Water Code section 13241 is inconsistent with the Clean Water Act, the Clean Water Act prevails.[124]

The Central Valley Regional Board, in any event, was not required to consider the Water Code section 13241 factors. In this case, the Central Valley Regional Board implemented a mandatory federal permit condition that implements the Clean Water Act's technology-based requirements. Section 13241 specifies the factors that a Regional Board must consider in adopting water quality objectives. The federally required bypass prohibition is not a water quality objective. Water Code section 13241 contains factors, such as the environmental characteristics of the hydrographic unit under consideration, that are relevant to the adoption of water quality objectives, but irrelevant to technology-based permit requirements.

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[123] See *United States v. City of Toledo* (N.D.Ohio 1999) 63 F.Supp.2d 834.

[124] See Wat. Code § 13372. Rather than illegally refusing to enforce a state statute, as CASA contends, the Board is expressly complying with Water Code section 13372. This section, which is included in Chapter 5.5, dictates that the State and Regional Boards ensure consistency with the requirements for state permit programs under the Clean Water Act. The statute provides that Chapter 5.5's provisions prevail over other Water Code provisions, including section 13241, to the extent of any inconsistency.

Vacaville, nevertheless, contends that recent EPA correspondence indicates that Vacaville's blending approach is now permissible. In recent correspondence, EPA has stated that "NPDES authorities have considerable flexibility through the permitting process to account for different peak flow scenarios that are consistent with generally accepted good engineering practices."[125] Permits can allow a POTW to discharge effluent routed around biological treatment units that is blended with effluent from the units if all of the following principles are met:

(1) The final discharge meets effluent limits for secondary treatment and/or any more stringent water quality-based effluent limits.

(2) The NPDES permit application for the POTW provides notice of, and the permit specifically recognizes, the treatment scheme that will be used for peak flow management. The treatment scheme, including designed capacity of various units, should be consistent with generally accepted practices and design criteria and designed to meet applicable effluent limits.

(3) Alternative flow routing scenarios are only used when flows exceed the capacity of storage/equalization units and biological treatment units based on generally accepted good engineering practices and criteria.

(4) During peak flow conditions, the treatment system chosen by the permittee is operated as it is designed to be operated and in accordance with permit conditions.

(5) The permit contains appropriate requirements for the collection system, including, at a minimum, that the permittee properly design, operate, and maintain its collection system.

Blending practices that do not meet the above criteria are considered illegal bypasses, unless they fall within the "essential maintenance" exception. The Central Valley Regional Board concluded that Vacaville's blending practice did not meet the above criteria. Specifically, Vacaville had not demonstrated that its treatment scheme was consistent with accepted engineering practices, including the use of storage or equalization basins to provide initial capacity for peak wet weather flows. Hence, Vacaville did not meet either the second or the third criterion.

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[125] Central Valley Regional Board Exh. 35.

It is unclear whether Vacaville would meet the first criterion as well. Vacaville contends that it will meet effluent limits based on secondary treatment. Evidence in the record indicates that Vacaville violated daily maximum permit limits for total suspended solids (TSS) on 2 occasions when wet weather flows exceeded 17 mgd.[126] Whether the discharger would also comply with its water quality-based limits is uncertain. For example, it appears that Vacaville would have difficulty meeting its copper effluent limit. Available data in the administrative record shows that influent copper concentrations have averaged about 60 µg/L and effluent concentrations have averaged well under 10 µg/L when all flows received secondary treatment. Most of the reduction occurs in the biological treatment, i.e. activated sludge, process, which is partially bypassed during blending events.[127] The recombined flow stream may not consistently meet the copper effluent limit. Vacaville also would likely violate ammonia effluent limits for similar reasons because the nitrification, i.e., the ammonia removal, process is partially bypassed.[128]

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[126] In February 1996 the facility exceeded the daily maximum limit for TSS by 311 pounds and in January 1997 by 1,598 pounds. Vacaville NPDES Permit Application, fn. 66, *supra,* Att. C; EIR, fn. 42, *supra*, Vol. II, p. 4.3-18.

[127] See Vacaville NPDES Permit Application, fn. 66, *supra,* Att. C. The following table illustrates the copper reductions achieved by secondary treatment:

Copper data, µg/L

	influent	primary effluent	secondary effluent	final effluent
date	E-INF	E-PE	E-SE	E-EFF
Mar-95	70	28	16	6
Jul-95	53	47	9	7.5
Apr-96	34	27	4.6	4.1
Sep-96	67	66	14	9
Mar-97	38	25	5	5
Sep-97	78	42	6	6
averages	57	39	9	6

[128] See *ibid.* The following table illustrate the ammonia reductions achieved by secondary treatment:

[footnote continued next page]

For these reasons, the Board finds that the Central Valley Regional Board acted reasonably in prohibiting bypass. Once Vacaville has achieved significant infiltration and inflow reductions, has constructed equalization or storage units, or otherwise demonstrates that bypass is permissible, the Central Valley Regional Board can reopen the Vacaville permit to reconsider the blending prohibition. The Board notes that EPA's position on blending is apparently evolving. The Board encourages the Central Valley Regional Board and Vacaville to continue to consult with EPA on this topic.

The Board recognizes that the Central Valley Regional Board authorized blending in prior Vacaville permits. The applicable federal regulations, however, allow blending only under the strictures of the bypass prohibition. The Central Valley Regional Board acted properly in enforcing the bypass prohibition in the current Vacaville permit.

2. Water Code Section 13360

Contention: Vacaville contends that the bypass prohibition violates Water Code section 13360 by specifying the manner of compliance with the permit.

Finding: The bypass prohibition does not violate section 13360. As explained previously, the bypass condition is a federal requirement. Even assuming that the condition violated section 13360, the federal requirement would prevail. Clearly, the bypass condition

Ammonia data, mg/L

	influent	primary effluent	secondary effluent	final effluent
date	E-INF	E-PE	E-SE	E-EFF
Mar-95	18	16	0.05	0.07
Jul-95	18	18	0.095	0.13
Apr-96	20	18	0.062	0.44
Sep-96	24	23	0.16	0.097
Mar-97	26	24	0.1	0.2
Sep-97	27	25	0.3	0.1
averages	22	21	0.1	0.2

does not violate the section, however. The condition simply requires that permittees operate all pollution control equipment at all times. The condition does not specify what particular treatment technology the permittee must use to meet technology-based requirements. Nor does the condition specify how the permittee must comply with the bypass restriction. The permittee is free to choose any scenario that meets the prohibition. For example, the permittee may choose to size all facilities to handle excess flows or may choose to construct storage or equalization basins for this purpose.

D. Receiving Water Ammonia Limit

Contention: Vacaville objects to a receiving water permit limit for ammonia that is based on a European Union (EU) standard. Vacaville contends that the limit misapplies the standard.

Finding: The Board agrees. The Vacaville permit contains an ammonia receiving water limit of 0.5 mg/L as a 30-day average.[129] The Central Valley Regional Board included the limit to implement a narrative Current Basin Plan objective for taste and odor. The objective states, in part, "[w]ater shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal supplies . . . ."[130] The Current Basin Plan describes suitable sources for determining compliance with narrative objectives. These include numeric criteria from other appropriate agencies and entities. The ammonia limit's source is EU Council Directive 98/83/EC, "On the Quality of Water Intended for Human Consumption."[131]

The Central Valley Regional Board appears to have implemented the EU ammonia value in a manner not consistent with its intent. The EU regulations explain that the value is intended to be used for monitoring purposes and as an indicator parameter. If the value is exceeded, the EU member states are directed to consider whether non-compliance poses any human health risk. If so, they must take any necessary remedial actions to restore water quality for human health protection. Thus, the EU value is not intended to address taste and odor

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[129] Order No. 5-01-044, Receiving Water Limitation D.14.

[130] Central Valley Regional Board Exh. 25, III-7.00.

[131] Vacaville Exh. 32.

concerns, but rather human health.[132] In addition, the EU regulations refer to ammonia whereas the Vacaville permit requires that ammonia be measured as ammonia nitrogen (ammonia-N). Given these discrepancies, the Board concludes that the Central Valley Regional Board erred in using the EU value to implement the narrative taste and odor objective. The Board will remand this limit to the Central Valley Regional Board for reconsideration.

E. Receiving Water Temperature Limit

Contention: Vacaville and CASA object to a receiving water limit for temperature in Order No. 5-01-044. They contend that the limit is inappropriate because it implements a Current Basin Plan objective that addresses temperature increases over "natural receiving water temperature." Old Alamo Creek has no natural receiving water temperature, they argue, because flows upstream of the Easterly plant are discontinuous and intermittent. Additionally, the flows consist of irrigation return flows and waste discharges.

Finding: The Board agrees. The Central Valley Regional Board should impose appropriate temperature controls on the Easterly treatment plant discharge after a site-specific study is completed for Old Alamo Creek and downstream waters.

The Vacaville permit prohibits the Easterly discharge from causing the 30-day average ambient temperature to increase more than 5° Fahrenheit (F).[133] This limit implements a Current Basin Plan objective that states that "[a]t no time shall the temperature of COLD or WARM interstate waters be increased more than 5° F above natural receiving water temperature."[134] "Natural receiving water temperature" is defined in the Board's Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (1975) (Thermal Plan). It means "[t]he temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge or irrigation return waters."

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[132] The Board is not aware of any federal or state numeric, human health-based values for ammonia that are based on ingestion of water. EPA has not published human health-based criteria guidance for ammonia based on oral exposure. The state Office of Environmental Health Hazard Assessment has developed acute and chronic reference exposure levels for ammonia that are based on inhalation or eye contact for vapor phase ammonia.

[133] Order No. 5-01-044, Receiving Water Limitation D.8.

[134] Central Valley Regional Board Exh. 25, III-8.00.

Old Alamo Creek has no readily identifiable receiving water temperature. Re-routing the former Alamo Creek into New Alamo Creek disconnected most of the watershed and subsequent flow from Old Alamo Creek. As such, flow upstream of the Easterly discharge is often zero during dry periods of the year and highly variable during the rainy season. At times, even in the rainy season the creek has no flow. During the dry season, Old Alamo Creek flows upstream of the treatment plant originate from urban and agricultural runoff and the discharge from a groundwater remediation project. Establishing a natural receiving water temperature is problematic since there may be "natural" flows only during short periods of the year.

The Central Valley Regional Board attempted to account for the influence of the groundwater remediation discharge and irrigation runoff on upstream flows by moving the existing receiving water temperature monitoring point R1 upstream. The Central Valley Regional Board also established several new downstream monitoring stations. The Central Valley Regional Board established these new monitoring points to assist Vacaville in conducting an instream temperature investigation over both wet and dry seasons. It is questionable, however, whether the new sampling point R1 can adequately represent instream conditions. An elevated area separates R1 from the discharge; consequently, flows at this point may not reach the Easterly treatment plant.

In lieu of constructing the new R1 monitoring station, Vacaville has proposed another study that will evaluate several locations for an upstream monitoring point capable of accurately determining temperature and flow.[135] The proposed work plan describes a one-year study to evaluate the validity of permit limits, such as temperature, dissolved oxygen, turbidity and pH. The work plan's approach appears to be sound and, if implemented, can assist the Central Valley Regional Board and Vacaville in establishing appropriate background conditions. The Board notes that downstream beneficial uses must also be protected. In its study Vacaville must address the temperature effects of the Easterly discharge on the COLD use in New Alamo Creek.

For the reasons stated above, the Board concludes that the Current Basin Plan's temperature objective does not clearly apply to Old Alamo Creek. The Board, therefore, will

[135] Vacaville Exh. 1C, App. D.

remand the receiving water temperature limit to the Central Valley Regional Board for reconsideration.

F. Effluent Limitations Based on MUN

Vacaville and others contest final permit limits for several pollutants that implement the MUN beneficial use. These include final effluent limitations for arsenic, trihalomethanes and nitrate and the receiving water ammonia limit. The Board has previously addressed the ammonia limit. The Central Valley Regional Board has voluntarily agreed to withdraw the arsenic effluent limit. This discussion addresses the final trihalomethane and nitrate effluent limits.

The Board prefaces this discussion by acknowledging that the Board has concluded that the Central Valley Regional Board must expeditiously initiate basin plan amendments to consider dedesignating the MUN use. The Board previously concluded that the Central Valley Regional Board properly assigned MUN to Old Alamo Creek. Until this use designation is changed, the Central Valley Regional Board was legally required to include limits to protect the use in Vacaville's permit.

Although the Central Valley Regional Board had to include final limits implementing the MUN use, these limits are not currently in effect. As stated previously, the Central Valley Regional Board included compliance schedules and interim, performance-based limits for trihalomethanes and nitrate. These measures ensure that Vacaville is not in violation of its permit pending appropriate basin plan amendments. In addition, the Board is committed to assist the Central Valley Regional Board and Vacaville in obtaining a case-by-case exception, if necessary, for the final trihalomethane limits in Order No. 5-01-044.

1. Trihalomethanes

Four constituents, bromoform, bromodichloromethane, chloroform, and dibromochloromethane, are commonly known as total trihalomethanes (THMs). They are formed by the reaction of chlorine, bromine, and organic matter. The Vacaville permit has final effluent limits for three, bromodichloromethane, dibromochloromethane, and chloroform.[136]

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[136] Order No. 5-01-044, Effluent Limitations B.1 (final limits) and B.2 (interim limits).

Final effluent limits for the first two pollutants are based on CTR criteria for human health protection, based on ingestion of both water and aquatic organisms. The final chloroform effluent limit, which implements a narrative toxicity objective, is based on an EPA ambient water quality criteria guidance for human health. Vacaville is required to comply with the final limits by March 1, 2006.[137] In the interim, Vacaville must meet effluent limits based on plant performance.

Contention: Vacaville contends that the final THM limits are improper because the receiving waters are not used for drinking water. In addition, Vacaville points out that the final limits are much more stringent than federal and state maximum contaminant levels (MCLs) for THMs in drinking water. Vacaville also contends that the final limits are unnecessary because, before the effluent reaches the first drinking water intake, the THM levels are greatly reduced through dilution and volatilization. Vacaville argues that the Central Valley Regional Board should have calculated final limits based on the receiving water's harmonic mean flow. Finally, Vacaville alleges that the final chloroform limit is invalid because the criteria guidance on which it is based is questionable.

Finding: The final bromodichloromethane and dibromochloromethane limits were required under the CTR and Toxics Policy, given Old Alamo Creek's MUN use. For the reasons explained previously, the Central Valley Regional Board must expeditiously initiate basin plan amendments to consider dedesignating this use. There is no data in the record on which to calculate dilution for Old Alamo Creek. The Board concurs that the final chloroform effluent limit is inappropriate.

The Board has previously concluded that the Central Valley Regional Board properly determined that MUN is assigned to Old Alamo Creek. Under the Clean Water Act, the Central Valley Regional Board was required to include in the Vacaville permit all effluent limitations that were necessary to achieve water quality standards protecting MUN. EPA permit regulations similarly require that permits include effluent limitations to control all pollutants that may be discharged at levels that will cause, have the reasonable potential to cause, or contribute

[137] *Id.* Effluent Limitations B.1, fn. 6.

to a water quality standards violation. State law likewise mandates that NPDES permits include all effluent limits necessary to protect water quality standards.

The CTR contains toxic pollutant criteria that apply to all waters assigned the MUN use. The criteria include human health criteria for bromodichloromethane and dibromochloromethane.[138] The Central Valley Regional Board properly implemented the Board's Toxic Policy in determining that effluent limits for the two pollutants were needed.

The Central Valley Regional Board imposed the final effluent limits without a dilution credit. This was appropriate. There is no data in the record on dilution in Old Alamo Creek itself. In order to develop a dilution ratio for human health criteria, the Toxics Policy requires the permit writer to use the receiving water's harmonic mean flow.[139] The Toxics Policy includes an equation to calculate the harmonic mean flow; however, the equation cannot be used when a discharge is made to receiving waters without consistent background dilution. EPA guidance suggests using computer models for situations without reliable upstream flow. Since the Toxics Policy does not permit other dilution calculations for human health criteria, however, no dilution is possible for human health toxicants discharged to Old Alamo Creek.

The final chloroform permit limit is based on an EPA criteria guidance that was initially included in the proposed CTR.[140] The final CTR, however, reserved a numeric criterion for chloroform.[141] The CTR preamble states that EPA "intends to reassess the human health 304(a) criteria recommendation for chloroform."[142] EPA is apparently reconsidering chloroform's cancer risk based on new data and analysis. Under these circumstances, the Board questions the use of the chloroform criteria guidance and, therefore, will remand the final chloroform limit to the Central Valley Regional Board. On remand, if the Central Valley Regional Board can verify that the criteria guidance has continuing validity, the Central Valley Regional Board can rely on it. Otherwise, the Central Valley Regional Board has several options. The Central Valley Regional Board may be able to control chloroform through effluent

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[138] See 40 C.F.R. § 131.38 (b)(1) & (d)(1).

[139] Toxics Policy, § 1.4.2.1, Table 3.

[140] See 62 Fed. Reg. 42160-42208 (August 5, 1997) at 42196.

[141] 40 C.F.R. § 131.38(b)(1)(compound 26).

[142] 65 Fed. Reg. at 31705.

limits for bromodichloromethane and dibromochloromethane. Alternatively, it may be appropriate for the Central Valley Regional Board to rely on the MCL for total THMs, which is 80 μg/L.

The Board notes that THM concentrations in the Easterly plant effluent are probably significantly reduced by the time the effluent reaches New Alamo or Ulatis Creeks. This is due to volatilization and, possibly, limited dilution. If MUN is dedesignated for Old Alamo Creek, Vacaville will likely be able to meet any THM limits necessary to achieve downstream MUN uses.

2. Nitrates

The Vacaville permit includes a final effluent limit for nitrate (as nitrogen) in order to protect the MUN use within the Delta.[143] The limit is based on the primary drinking water MCL of 10 mg/L for nitrate (as N). The limit assumes no dilution. The permit includes a compliance schedule that allows Vacaville until March 1, 2008, to comply with the limit.[144]

Contention: Vacaville objects to the final nitrate limit because Old Alamo Creek is not used for drinking water. Vacaville contends that the Easterly plant effluent is diluted by more than 100:1 by the time it reaches an actual drinking water intake. Vacaville also contends that the Central Valley Regional Board failed to allow a dilution credit based on the receiving water's harmonic mean flow. In addition, Vacaville argues that the nitrate limit is invalid because it implements a Basin Plan provision that illegally incorporates-by-reference future MCLs adopted by the Department.

Finding: The nitrate limit is appropriate. The Central Valley Regional Board properly disallowed dilution for Old Alamo Creek. The Basin Plan's incorporation-by-reference of future MCLs is legal.

The Board previously concluded that the Central Valley Regional Board properly assigned MUN to Old Alamo Creek. The Basin Plan requires that waters designated for MUN

[143] Order No. 5-01-044, Effluent Limitations B.1.

[144] See *id.* Effluent Limitations B.1, fn. 14.

meet, at a minimum, primary and secondary drinking water MCLs adopted by the Department.[145] The Basin Plan incorporates the MCLs by reference. The incorporation also covers future changes to the MCLs.[146]

The Central Valley Regional Board calculated the final nitrate effluent limit based on the primary MCL with no dilution credit. This was proper because, as previously stated, there is no data in the record on the flows in Old Alamo Creek. There is apparently little to no flow upstream of the treatment plant. The record also lacks data on background nitrate concentrations in Old Alamo Creek so the creek's capacity, if any, to assimilate nitrates is unknown.

It is important to note that the nitrate MCL is set very close to its reference dose, which is 11 mg/L. Reference doses are used in calculating MCLs. A reference dose is an estimate of the daily exposure to the human population that is likely to be without appreciable risk of toxic injury or disease. Exposure to nitrates at levels greater than the reference dose increases the probability of adverse health effects, particularly for infants.[147]

Contrary to Vacaville's assertion, the prospective incorporation is legal. The Board notes that OAL approved the Basin Plan amendment that added this provision.[148] Further, OAL has distinguished between prospective incorporation-by-reference of federal regulations and prospective incorporation of state regulations. With respect to the latter, OAL has specifically approved the prospective incorporation of drinking water standards contained in Department regulations.[149] There are several reasons for this. The Legislature has delegated the primary responsibility for drinking water standards to the Department.[150] The MUN designation

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[145] Central Valley Regional Board Exh. 25, III-3.00.

[146] *Ibid.*

[147] See, e.g., Cal. Code Regs., tit. 22, § 64482(b), which requires that drinking water systems that detect nitrate at levels above 23 mg/L, but below 45 mg/L, notify consumers that "[n]itrate in drinking water at levels above 45 mg/L is a health risk for infants of less than six months of age" and that "[n]itrate levels above 45 mg/L may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies." Nitrate at 45 mg/L is equivalent to nitrate (as N) at 10 mg/L.

[148] See Cal. Code Regs., tit. 23, § 3940.

[149] See *ibid.*

[150] Health and Saf. Code §§ 116300, 116350.

is inextricably tied to drinking water standards. Further, the public has an opportunity to participate in any future Department rulemakings to change the drinking water standards. Future changes to Department regulations must by adopted in accordance with the APA's rulemaking requirements.[151]

If MUN is dedesignated for Old Alamo Creek, it is uncertain whether the nitrate limits could be relaxed. MUN is designated as an existing Delta use. There is at least minimal dilution at the Delta boundary. There is, however, no data in the record on background nitrate concentrations in New Alamo Creek or downstream waters. Hence, it is uncertain whether downstream waters have assimilative capacity for nitrates.

G. Lindane Effluent Limits

The Vacaville permit contains a final daily maximum effluent limit for lindane, an organochlorine pesticide, of non-detectable.[152] Non-detectable is any lindane concentration below 0.019 μg/L.[153] The Central Valley Regional Board included the final limit in Vacaville's permit to implement a Current Basin Plan pesticide objective. The objective states that "[t]otal identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by [EPA] or the [Central Valley Regional Board's] Executive Officer."[154] The Central Valley Regional Board determined that this objective is more stringent than the applicable CTR human health criterion for lindane, which is 0.019 μg/L. The Central Valley Regional Board used the CTR criterion as the minimum reporting level.

Vacaville is required to fully comply with the limit by March 1, 2006.[155] Data in the record covering a five-year period show a trend of decreasing lindane concentrations in the effluent. During this period, the maximum effluent concentration was 0.036 μg/L and the minimum was undetectable. The average for the period was reported as 0.018 μg/L, which is

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[151] See Gov. Code § 11340 et seq.

[152] Order No. 5-01-044, Effluent Limitations B.1.

[153] *Id.* Effluent Limitations B.1, fn. 6.

[154] Central Valley Regional Board Exh. 25, III-6.00.

[155] Order No. 5-01-044, Effluent Limitation B.1, fn. 6.

below the minimum reporting level in the Vacaville permit. As of January 1, 2002, lindane has been banned in the state for use in shampoos to treat lice and scabies.[156] It is reasonable to assume, therefore, that lindane concentrations in the Easterly effluent will continue to decline.

Contention: Vacaville objects to the lindane limit on the ground that the limit is unnecessary to protect human health. Vacaville also objects to the use of a daily maximum limit instead of a weekly or monthly average. Additionally, Vacaville contends that the Basin Plan objective is illegal because it incorporates future non-detectable levels and because it violates Water Code section 13241.

Finding: The lindane limit is appropriate. The Central Valley Regional Board must amend its permit findings to explain why it is impracticable to express the lindane limit as an average weekly or monthly limit. The Current Basin Plan objective is not subject to challenge on prospective incorporation grounds nor does the Current Basin Plan violate section 13241.

The Current Basin Plan objective for pesticides that the Central Valley Regional Board implemented in Order No. 5-01-044 applies to all surface waters within the region. It applies even if MUN is not an assigned use. Consequently, the Central Valley Regional Board acted properly in including a lindane limit of non-detectable in Vacaville's permit.

The lindane limit is non-detectable as a daily maximum. EPA's NPDES permit regulations require that effluent limits in POTW permits be expressed, unless impracticable to do so, as average weekly and average monthly limits.[157] The permit does not include findings explaining why it is impracticable to include a final lindane limit with these averaging periods. Because the Central Valley Regional Board based the minimum reporting level for this pollutant on the CTR human health criterion, it may be appropriate to have an average limit rather than a daily maximum. On remand, the Central Valley Regional Board must address this issue.[158]

Vacaville's challenge to the chlorinated hydrocarbon pesticides objective in the Current Basin Plan must be rejected. With minor wording changes, this objective has been in the Current Basin Plan since 1975. The objective was adopted well before 1992 and is, thus,

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[156] Health & Saf. Code § 111246.

[157] 40 C.F.R. § 122.45(d)(2).

[158] For the same reason, the Central Valley Regional Board must also address the averaging period for the nitrate limit.

immune from an APA challenge on the ground that it contains an allegedly illegal prospective incorporation-by-reference.[159] In addition, the statute of limitations has long since run on any challenges to the objective. The Central Valley Regional Board was required to consider the Water Code section 13241 factors when it initially adopted the objective. It is not required to reconsider those factors every time the objective is implemented in a permit.[160]

H. Copper Effluent Limitation

The Central Valley Regional Board included a daily maximum effluent limit for total recoverable copper of 10.4 μg/L in the Easterly permit. The limit is based on a Current Basin Plan objective for dissolved copper of 10 μg/L for Delta waters.[161] The objective is independent of hardness. The CTR also has dissolved copper criteria to protect aquatic life. The criteria are hardness-based.[162] Taking into account the worst-case hardness of 117 mg/L of calcium carbonate, the CTR copper criteria are 16 and 11 μg/L for acute and chronic toxicity, respectively. Because the Current Basin Plan Delta objective is more stringent than the CTR criteria, the Central Valley Regional Board based the permit limit on the objective.

EPA permit regulations require that all effluent limitations for metals be expressed as "total recoverable metal."[163] Consequently, a "translator" is required to convert a dissolved criterion or objective to a total recoverable limit. The Central Valley Regional Board applied an EPA conversion factor to translate the dissolved Delta objective into a total recoverable limit. Under the Toxics Policy, EPA conversion factors are "default translators", i.e., they apply in the absence of a site-specific translator.[164] The Central Valley Regional Board committed to reopen the permit and recalculate the copper limit if the discharger completed a defensible two-year site-specific translator study. The permit also explains that the Central Valley Regional Board applied the objective at the end-of-pipe because there is little to no

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[159] See Gov. Code § 11353(a) & (b).

[160] See *Hampson v. Superior Court* (1977) 67 Cal.App.3d 472, 481, 136 Cal.Rptr 722.

[161] Central Valley Regional Board Exh. 25, III-4.00.

[162] 40 C.F.R. § 131.38(b)(1), fn. e, and (b)(2).

[163] *Id.* § 122.45(c).

[164] Toxics Policy, § 1.4.1.

dilution between the discharge point and the legal Delta boundary. The Central Valley Regional Board did not include a compliance schedule because effluent data for 1999 indicated that Vacaville could comply with the limit.

Contention: Vacaville contends that the Central Valley Regional Board was not justified in imposing a copper limit based on the Delta objective because the Easterly effluent receives at least some dilution prior to reaching the Delta boundary. Vacaville also contends that Vacaville was entitled to an interim copper limit based on current treatment plant performance, pending completion of an appropriate site-specific translator study.

Finding: There is insufficient evidence in the record to determine whether the Easterly discharge has the reasonable potential to cause or contribute to an exceedance of the Delta copper objective at the Delta boundary. When the Central Valley Regional Board adopted Order No. 5-01-044, Vacaville was not entitled to an interim performance-based copper limit. Nevertheless, Vacaville can still take advantage of the flexibility afforded by the Toxics Policy to propose and develop a site-specific translator and, thus, qualify for interim, performance-based limits.

In adopting the Vacaville permit, the Central Valley Regional Board had to ensure that the Easterly discharge attained both water quality standards for Old Alamo Creek, as well as downstream Delta standards. There is insufficient evidence in the record to determine whether, in fact, the Easterly discharge had the reasonable potential to cause or contribute to an exceedance of the Delta copper standard in the Delta itself. Limited data in the record indicate that New Alamo Creek may have flows year-round and, hence, the Easterly discharge may receive at least some dilution prior to the Delta boundary. Whether Delta waters can assimilate more copper is unclear because data on background copper concentrations is not in the record. On remand, the Central Valley Regional Board, therefore, must reconsider whether the copper limit is necessary to protect Delta standards.

In adopting Order No. 5-01-044 the Central Valley Regional Board properly applied the Toxics Policy's provisions on metals translators. The Toxics Policy requires that the permit writer use EPA conversion factors to develop total recoverable effluent limitations for metals. However, the Toxics Policy also allows the Central Valley Regional Board to approve and use a site-specific translator. To qualify for a site-specific translator, a discharger must

commit in the permit application to complete a defensible site-specific translator study and describe the study methodology.[165] The Central Valley Regional Board can then establish a compliance schedule in the permit that allows the discharger up to two years from permit reissuance to complete the study and to propose a site-specific translator. The permit must include a final effluent limit based on the applicable EPA conversion factor and an interim numeric limit based either on current treatment plant performance or the prior permit limit, whichever is more stringent.

Although Vacaville has provided the preliminary results of an informal translator study, Vacaville has yet to comply with the Toxics Policy's provisions on site-specific translators. Clearly, it is in Vacaville's best interests to do so. The preliminary results from its informal study suggest a translator of 0.63.[166] If this value is ultimately validated and the Delta objective is used, the objective would be converted to 16.5 μg/L total recoverable copper. Since the observed maximum total recoverable copper concentration in the Easterly treatment plant effluent was 16 μg/L from 1995-1999, an effluent limitation may not be required.[167] Similarly, the lowest CTR copper criterion would be converted to 17 μg/L, total recoverable copper, using a translator of 0.63. Again, an effluent limit may not necessarily be required.

The Board urges Vacaville to formally submit a proposal to the Central Valley Regional Board, as provided in the Toxics Policy, to develop a defensible site-specific translator study together with the study methodology. The Central Valley Regional Board may then reopen Vacaville's permit to include a two-year schedule for Vacaville to develop and submit a defensible translator. Vacaville would then qualify for interim limits, as provided in the Toxics Policy.

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[165] *Ibid.*

[166] Vacaville Exh. 1B, App. B, p. 4.

[167] See Toxics Policy, § 1.3.

I. Groundwater Limitation E.1

The Current Basin Plan designates the groundwater underlying the Easterly treatment plant site for MUN, AGR, and industrial service and process supply uses.[168] The Easterly facility includes unlined sludge lagoons and a holding pond that can impact groundwater quality. The current expansion includes two new lined sludge storage lagoons, which, when put in operation, are expected to mitigate any potential groundwater impacts. The Vacaville permit includes Groundwater Limitation E.1, which prohibits the discharge, in combination with other sources, from "[causing] the underlying groundwater to contain waste constituents in concentrations greater than background water quality." Increases in total dissolved solids (TDS) or electrical conductivity (EC) over background, within the monitoring points, are allowed but cannot exceed applicable objectives, adversely impact beneficial uses, or cause pollution or nuisance.

Contention: Vacaville contends that, because the Easterly treatment plant effluent likely infiltrates into groundwater, Vacaville cannot feasibly comply with the groundwater limit. In addition to infeasibility, Vacaville objects to the limit on the grounds that it is unreasonable and inconsistent with the Current Basin Plan, State Board Resolution No. 68-16, and the Water Code.

Finding: Evidence in the record is insufficient to adequately analyze the treatment plant's impact on groundwater quality. The evidence suggests, however, that operation of the treatment plant has resulted in some changes in groundwater quality. On remand, the Central Valley Regional Board is requested to clarify the significance of the available groundwater monitoring data. If the treatment plant's operation has changed groundwater quality, Vacaville should be given the opportunity to submit information demonstrating that a lowering of groundwater quality is consistent with Resolution No. 68-16.

The Current Basin Plan contains an objective for chemical constituents that reads: "Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses."[169] The Current Basin Plan also incorporates State Board Resolution No. 68-16,

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[168] Central Valley Regional Board Exh. 25, II-2.00 through II-3.00.

[169] *Id.*, III-9.00.

entitled "Statement of Policy With Respect to Maintaining High Quality of Waters in California".[170] Resolution No. 68-16 is a statewide antidegradation policy that applies to both surface waters and groundwater.

Resolution No. 68-16 is more stringent than the chemical constituent objective. Resolution No. 68-16 establishes state policy that the quality of high quality waters shall be maintained "to the maximum extent possible". The policy allows water quality to be lowered but only if the discharger demonstrates that three criteria are met. Specifically, the discharger must demonstrate that any change will: (1) be consistent with the maximum benefit to the people of the State; (2) not unreasonably affect the water's present and anticipated beneficial uses; and (3) not result in water quality less than applicable water quality objectives.

The Central Valley Regional Board asserts that the groundwater limitation is consistent with the Current Basin Plan and appropriately implements State Board Resolution No. 68-16. The Central Valley Regional Board contends that the groundwater underlying the treatment plant is of high quality for the pollutants present in the Vacaville discharge, except for TDS and EC. For the latter, the Central Valley Regional Board determined that a water quality lowering was consistent with Resolution No. 68-16. In addition, the Central Valley Regional Board has stated that groundwater data do not indicate any impairment due to the Vacaville discharge, presumably except for TDS and EC.

Since about 1993 the Central Valley Regional Board has required Vacaville to monitor the groundwater at five locations to evaluate whether the Easterly treatment plant's sludge lagoons and holding pond are adversely impacting groundwater. The permit fact sheet states that the data indicate that the treatment plant "may be having an effect on groundwater pH and conductivity levels at some of the monitored wells (mainly Wells No. 1, 2, and 3)." The fact sheet concludes that longer term monitoring is necessary to verify that the observed changes are due to the treatment plant and not other factors.[171] In the permit itself the Central Valley

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[170] *Id.*, IV-15.00 through IV-16.00.

[171] Order No. 5-01-044, App. H.

Regional Board found that "[c]urrent monitoring data has not identified significant changes" in groundwater quality due to treatment plant operations.[172]

The evidence in the record does not appear to support the Central Valley Regional Board's finding. Although the record includes monitoring data for groundwater monitoring wells 1 through 5, the record does not include information on their location. Well 1 is upgradient of the other four and presumably is intended to reflect conditions outside the treatment plant's influence. Monitoring data include values for pH, EC and nitrate-nitrogen (nitrate-N). The data indicate that Wells 1 and 5 have had concentrations of nitrate-N in excess of the drinking water MCL. Well 1 in particular displayed a significant and prolonged elevated nitrate-N concentration from January through September 1995. A nitrate-N spike was also evident in Well 5 during the same period. Nitrate-N levels exceeded drinking water MCLs in Well 1 from January through September 1995 and in July 1996, and in Well 5 during April and May 1995 and in May 2001. Something clearly appears to be contaminating Wells 1 and 5 with excess nitrate-N; however, this is not explained in the Vacaville permit or in the record. It is possible that the groundwater is not high quality with respect to nitrate-N or that the treatment plant has caused the nitrate-N exceedances.

Well 1 also exhibited significant variability in EC and pH during 1995. Wells 2, 3, and 4 did not have this pattern, and all nitrate-N samples were below the MCL. Well 5 has not shown much variability with respect to EC and pH. With respect to TDS, the monitoring data indicate that Wells 2, 3, 4, and 5 have had concentrations of TDS that exceed the agricultural water quality goal of 450 mg/L.

Without more information on well location and some explanation of the changes in nitrate-N, TDS and pH concentrations, the Board is unable to draw any meaningful conclusions from the monitoring data. The Board will remand this issue to the Central Valley Regional Board for clarification. If the treatment plant's operation has caused groundwater quality changes, Vacaville should be given the opportunity to submit information demonstrating that the changes meet the criteria in Resolution No. 68-16. If increases in nitrate-N

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[172] *Id.*, Finding 32.

concentrations over the MCL in groundwater are, in fact, due to the Easterly treatment plant operation, these changes would not meet the Resolution No. 68-16 criteria.

III. COST CONSIDERATIONS

The State Board invited the parties to this proceeding to submit cost information on the Vacaville permit. The Board is aware that, normally, the State and Regional Boards cannot consider costs when setting NPDES water quality-based permit effluent limits. The United States Court of Appeals for the Ninth Circuit has held that economic and technical restraints are not valid considerations in setting water quality-based effluent limits. The court has rejected arguments that a permit limit should be invalidated because compliance costs are high:

> "[T]he [effluent] limitation is necessary to comply with state water quality standards, and the Clean Water Act requires the permits to meet the state water quality standards. See 33 U.S.C. secs. 1311(b)(1)(C), 1313(c)(2). Accordingly, the economic and technological restraints are not a valid consideration."[173]

More recently, the appellate court has stated that a permitting authority "is under a specific obligation to require that level of effluent control which is needed to implement existing water quality standards without regard to the limits of practicability . . . [citations]."[174]

Further, under Chapter 5.5 of Division 7 of the Water Code, the State and Regional Boards are required to issue permits that "apply and ensure compliance with all applicable provisions of the [Clean Water Act] . . . ."[175] The provisions of Chapter 5.5 prevail over any other provisions in Division 7 that are inconsistent with Clean Water Act permit requirements.[176] These requirements include the mandate to ensure that permits contain any more stringent effluent limitations necessary to meet water quality standards regardless of cost

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[173] *Ackels v. EPA* (9th Cir. 1993) 7 F.3d 862, 865-66.

[174] *Defenders of Wildlife v. Browner* (9th Cir. 1999) 191 F.3d 1159, 1163.

[175] Wat. Code § 13377.

[176] *Id.* § 13372.

considerations. Likewise, permits must include the mandatory conditions, including the bypass prohibition, specified in EPA permit regulations.

Nevertheless, the Board solicited cost information on the Vacaville permit for two reasons. Various municipal dischargers requested that the Board consider interim relief for EDW dischargers pending completion of Phase 2. They asserted that the Regional Boards are imposing unreasonable and costly permit requirements that may become unnecessary under a future EDW policy. Vacaville provided the Board with a test case to examine this issue. The Board was especially interested in determining whether the Toxics Policy is sufficiently flexible to address the compliance problems faced by an EDW discharger. The Board also invited economic information to assist the Board in focusing its future efforts on EDWs.

Vacaville submitted detailed information to the Board on its compliance costs. In its petition to this Board as well as before the Central Valley Regional Board, Vacaville estimated that it would cost $117 million to build advanced treatment facilities to comply with its permit. In its hearing testimony, Vacaville revised the cost estimate to $240 million, more than double the original estimate, with $11 million in annual operation and maintenance costs. Monthly residential sewer rates were anticipated to triple and connection fees to quadruple.

Vacaville proposed an advanced treatment system that relies on reverse osmosis (RO) to achieve permit limits for ammonia, arsenic, copper, lindane, THMs and nitrate. The proposed system also includes aeration, temperature control, and ultraviolet light (UV) disinfection. To comply with the bypass prohibition, Vacaville included a primary effluent storage facility. The RO facilities and the storage facility largely drive the high estimated compliance costs.

The estimated costs are, as Vacaville has stated, "staggering," Both the treatment train proposed by Vacaville and the design approach on which the treatment train is based are unprecedented. Vacaville's approach was extremely conservative. It resulted in costs that are, in the Board's view, significantly overstated.

For example, an important feature in the design of the proposed treatment train involved the use of a probabilistic approach to calculate effluent concentrations for total copper, dissolved copper, THMs, lindane and nitrate. The approach used historical effluent data to calculate a concentration with an expected frequency of 1 in 1000. Their calculations also

produced "design means" on which their advanced treatment system was based. The use of 99.9 percent was intended to facilitate compliance with never-to-exceed limits.

There are several problems with this approach. Data used for these calculations are from the current plant, built in 1959 and most recently modified in 1990, with its inherent variability. Vacaville's approach assumes that the upgraded facility will discharge pollutants at similar concentrations with the same probability distributions as the current plant. This assumption is questionable. It is likely that the expanded and updated plant currently under construction will have less variability associated with its effluent, particularly if tertiary treatment is included. This is true for THMs, for example. The current plant expansion will substitute sodium hypochlorite for chlorine gas as the disinfectant. There is no reason to believe the resulting THM concentrations and associated probability distributions would be the same as observed in effluent from the current treatment plant.[177]

A major assumption underlying Vacaville's analysis is that the available data are sufficient to predict a design mean and the concentration expected at a 99.9 percent probability. The data sets used in the analysis for dissolved copper, chloroform, dibromochloromethane, and bromodichloromethane, and lindane, however, are small, with none containing more than 15 individual measurements. Additional measurements could significantly alter both the concentration expected at a 99.9 percent probability as well as the design mean. These data sets are too limited to provide a consistently reliable answer.

Costs for the effluent storage basin are greatly overstated. Vacaville contends that a 25 mgd covered storage basin with air scrubbing equipment is required to meet the bypass prohibition.[178] Vacaville estimates the capital costs to be about $52 million. Both the sizing and the need for odor control features are questionable. The method used to determine the basin's

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[177] Changes to the Easterly plant's chlorination and dechlorination processes are discussed in the Vacaville EIR for the Easterly treatment plant expansion. (EIR, fn. 42, *supra,* Vol. I, ch. 3.0, Att. A, pp. A-26 and A-27). The contact basin will be replaced, the chlorine sources will be changed and the dechlorination chemicals will be changed. The Board also notes that the Department's Title 22 regulations on disinfected tertiary recycled water do not even require chlorination. They also allow a performance-based approach, described as a disinfection process that removes 99.999 percent of F-specific bacteriophage MS2 or polio virus in wastewater. (Cal. Code Regs., tit. 22, § 60301.230(a)(2)).

[178] See Vacaville Exh. 4, Table 2 and App. C.

size was unprecedented and extremely conservative.[179] It assumes that peak dry weather flows occur at the same time as the highest volume recorded peak wet weather infiltration and inflow, and that this occurs on two successive days in a row.[180] No historical data were presented, however, to show that record peak flows would be statistically likely to occur on successive days and would coincide with the diurnal flow peaks on those days.

Vacaville's Exhibit 4 indicates that the basin was sized based on two peak storm events in January 1997 and February 1998, each with a duration of approximately 24 hours.[181] At the hearing one of the consulting engineers who analyzed flow data for this exhibit asserted that the February event spanned a 48 hour-period and the January event lasted more than 24 hours.[182] No historical data were provided, however, to support this new assertion. In addition, the sizing analysis assumes, without supporting data, that it may not be possible to maintain a 30 mgd flow from the basin to the plant headworks during a two -day event.[183] Even assuming that Vacaville's flow estimates are correct, their hydrographs indicate that diurnal peak flows are not constant throughout the day.[184] Hence, it is unclear why Vacaville would need to store more than the peak flows corresponding to a volume greater than 30 mgd.

Further, there is nothing in the record that justifies the need for a cover or odor control equipment. Vacaville cites a memorandum in the record by Brown and Caldwell that recommends odor controls since the basin "would need to be operated essentially on a daily basis, for both wet and dry conditions."[185] Vacaville also contends that odor control facilities are required by the EIR for the current expansion. Neither assertion is supported in the record.

There is no evidence to support the conclusion that the basin would be used daily and in dry weather conditions. In fact, this assertion conflicts with other evidence introduced by Vacaville. Vacaville selected the effluent storage facility to address the bypass prohibition in its

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[179] R.T., fn. 64, *supra,* p. 261.

[180] *Id.*, p. 364.

[181] Vacaville Exh. 4, App. C, p. C-3.

[182] R.T., fn. 64, supra, p. 367.

[183] Vacaville Exh. 4, App. C, p. C-6.

[184] Vacaville Exh. 4, App. C.

[185] Vacaville Exh. 1A, Att. 2, p. 1.

permit. The basin would be used "for storage of infrequent peak flows during major wet weather flow events" when flows exceeded the advanced treatment plant's 30 mgd capacity.[186]

Since the stated intent of the storage basin is to eliminate wet weather blending, it is appropriate to examine previous blending events. The current Easterly treatment plant is designed to provide secondary treatment for peak wet weather flows up to 17 mgd. Primary flows over 17 mgd are blended with secondary effluent and disinfected prior to discharge. Historically, blending events have occurred infrequently and only in January and February.[187] The largest peak wet weather flows, based on four years of hourly flow data from 1997 through 2000, occurred in January 1997 and February 1998. These were 23.4 and 22 mgd, respectively. The peak wet weather flows in excess of 17 mgd ranged from 17.1 to 23.4 mgd. Vacaville bypassed effluent on 5 days in 1997, 6 in 1998, 1 in 1999, and 1 in 2000. Since the advanced treatment train proposed by Vacaville can handle up to 30 mgd, 13 mgd more than the existing plant, the need for daily or even frequent use of the storage basin is not obvious.

Vacaville contends that the addition of advanced treatment will increase the frequency of flow rerouting, and that these rerouted flows will be added to plant influent. There is no data, however, indicating that flow rerouting is likely to result in influent flows exceeding the 30 mgd plant capacity, necessitating daily or frequent use of the primary effluent storage basin.

Further, there is no evidence in the record that the basin would be used in the summer months when the potential for odors would be highest. In this regard, the Board notes that the EIR for the treatment plant expansion recognizes that January is not reflective of "normal peak summer odor periods" and that "odor concentrations are reduced" during winter peak flow periods.[188]

Vacaville cites the EIR as justification for the cover and air scrubbing equipment. The EIR, however, states that "[o]dor control should target the chief odor sources: head works

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[186] Vacaville Exh. 1D, p. 6.

[187] See Order No. 5-01-044, Att. H, p. 2.

[188] EIR, fn. 42, *supra,* Vol. I, pp. 2-3 & 2-4.

and preliminary treatment processes."[189] It is also noteworthy that other existing and under-construction tanks and basins with equal or greater odor potential are not covered. For example, Vacaville's proposed advanced treatment train includes two aerators that receive primary effluent and aerate it prior to secondary treatment.[190] The aerators would be used on a daily basis and yet they are uncovered.

Aeration is an alternative to the odor controls proposed by Vacaville for the primary effluent storage basin. A Vacaville witness testified that simple surface aeration was not considered.[191] The stated rationale was that aeration would come "at some expense at odor potential."[192] Given this rationale, it is curious that the advanced treatment facility includes the two aeration basins, which receive primary effluent and which would be used daily but which include neither covers nor additional odor controls.

While Vacaville's costs are overstated, they are not insignificant. Through this review process, the Board has gained an appreciation for the need to ensure that a waterbody's designated uses are appropriate. The converse of that is that inappropriate use designations can lead to unnecessary and unreasonable costs. This is particularly true where, as here, MUN is a designated use but is neither existing nor likely to be feasibly attainable. The CTR's human health criteria for THMs, which apply to waters designated MUN, appear to the most problematic of the CTR criteria for Vacaville. The Board notes that some costs, such as those associated with tertiary treatment and the bypass prohibition, are not due to the CTR or the Board's Toxics Policy.

This Board action should result in greatly reduced costs for Vacaville. The greatest cost item in Vacaville's proposed treatment train is RO. Vacaville proposed RO to meet the ammonia receiving water limit and effluent limits for arsenic, copper, lindane, nitrate and THMs. The Board has already concluded that the ammonia limit is inappropriate. The Central Valley Regional Board will withdraw the arsenic limit. For copper, it is within Vacaville's control to seek permit relief by complying with the Toxics Policy's requirements for a site-specific translator study. Effluent concentrations for lindane have been decreasing, and the

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[189] *Id.*, Vol. II, p. 4.4-14.

[190] Vacaville Exh. 4, Fig. 3.

[191] R.T., fn. 64, *supra,* p. 388.

[192] *Ibid.*

substance is now banned. Additionally, the Vacaville permit gives the discharger five years to comply with the limit. Only THMs and nitrate are left as pollutants for which RO treatment might reasonably be considered.

Denitrification facilities are much less costly than RO facilities to meet the nitrate limits. At the Central Valley Regional Board, Vacaville estimated that costs for full denitrification capabilities would be from $13 to $15 million. The Vacaville permit includes a compliance schedule to allow the discharger time to complete the necessary facilities.

The remaining pollutants are the THMs. The Board has previously concluded that the Central Valley Regional Board must timely initiate a basin plan amendment to consider dedesignating MUN for Old Alamo Creek. The Vacaville permit includes a five-year compliance schedule for the THM limits. This order stays the compliance schedule for a three-year period to provide time for the Central Valley Regional Board to pursue appropriate basin plan amendments. In addition, , the Board will assist Vacaville in applying for a case-by-case exception, if necessary, for the THM limits. An application can be initiated immediately. Once the exception is approved, it will be in effect for the five-year permit term and it can be renewed in later permits.

The Board is unconvinced, in any event, that RO treatment is necessary to achieve THM limits. One effective alternative for reducing THM concentrations is to use UV disinfection in lieu of chlorine disinfection. Vacaville ruled out this alternative even though their prior economic analysis had selected UV as the most viable alternative for disinfection and elimination of THMs. Vacaville witnesses testified that chlorine use could not be totally discontinued, even with conversion to UV treatment, because of in-plant requirements for chlorine other than for disinfection. These requirements included chlorine dosing for sludge bulking control in the activated sludge process, process water chlorination, and chlorine addition to control algae and slime growths on filters. Textbooks by Vacaville's own witnesses on wastewater and water treatment plant design and operation are replete with alternatives to

chlorine use for each of these applications.[193] Although chemical alternatives, including hydrogen peroxide and ozone, are available, chlorine is most often used because it is cheaper and it is already on hand at the plant. In comparison to the costs for RO treatment and brine disposal, however, the additional chemical costs are insignificant.

IV. CONCLUSIONS

The Board has concluded that the most significant problem that Vacaville faces, as an EDW discharger, stems from inappropriate beneficial use designations for Old Alamo Creek. The MUN designation is the most problematic, due, in part, to stringent CTR human health criteria. The designation has resulted in particularly stringent permit limits for THMs, which the discharger cannot meet.

As a result of this petition review process, the Board has concluded that it is essential that the Central Valley Regional Board amend its Current Basin Plan to consider dedesignating COLD and MUN for Old Alamo Creek within a reasonable time frame. The Board recognizes that the Central Valley Regional Board needs adequate resources to accomplish this task. The Board notes that EPA has provided financial support through a consultant contract to assist the Central Valley Regional Board in dedesignating inappropriate uses. The State Board is likewise committed to providing any assistance possible to expedite a basin plan amendment. State Board staff are prepared to work with Central Valley Regional Board staff in developing legally defensible justifications for beneficial use modifications and, as funding is available, to provide contract support. The State Board also expects Vacaville to make appropriate commitments to assist the Central Valley Regional Board in this effort.

The State Board further concludes that, for priority toxic pollutants, the Toxics Policy is sufficiently flexible to provide permit relief to Vacaville and other similarly situated dischargers, pending any necessary basin plan amendments. The Central Valley Regional Board has already included compliance schedules in Vacaville's permit for priority pollutant effluent limits up to the maximum duration currently allowed under the CTR and Toxics Policy. For

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[193] See, e.g., Jenkins, et al., Manual on the Causes and Control of Activated Sludge Bulking and Foaming (1986), pp. 92, 114-117, 127-128; Metcalf and Eddy, Inc., Wastewater Engineering – Treatment, Disposal and Reuse, edited by Tchobanoglous and Burton (3d ed. 1991), p. 555; Crites and Tchobanoglous, Small and Decentralized Wastewater Management Systems (1998), p. 468; Schroeder, Water and Wastewater Treatment (1977), p. 211.

metals, the Toxics Policy includes translator provisions that, when used by a discharger, can address potential compliance problems. Likewise, the case-by-case exception provisions in the Toxics Policy can potentially provide significant permit relief. A case-by-case exception, especially coupled with a compliance schedule, can allow substantial time to amend a basin plan, where necessary. The Board is committed to working with the Regional Boards to ensure that the case-by-case exception process is workable and to expedite exception requests.

In sum, the Board concludes:

1. The Central Valley Regional Board properly implemented the tributary stream provisions in the Current Basin Plan.

2. The Central Valley Regional Board reasonably determined that a basin plan amendment was the appropriate vehicle to designate or dedesignate uses for Old Alamo Creek.

3. Neither COLD nor MUN is an existing use for Old Alamo Creek, and it is unlikely that they can feasibly be attained.

4. REC-1 is an existing use of Old Alamo Creek.

5. AGR, including unrestricted irrigation, is likely an existing use of Old Alamo Creek.

6. The Central Valley Regional Board must expeditiously initiate basin plan amendments to consider dedesignating COLD and MUN from Old Alamo Creek, and may require that Vacaville provide assistance, such as data collection and water quality-related investigations, in this effort.

7. Where a Regional Board has evidence that a use does not exist and likely is not feasibly attainable, the Regional Board should avoid enforcing permit limits to protect the use at least until the Regional Board either amends the basin plan to dedesignate the use, or determines that the use cannot legally be dedesignated.

8. In the circumstances described in 7., the Regional Board can provide interim permit relief, pending appropriate basin plan amendments, through compliance schedules in the permit, where authorized; case-by-case exceptions for priority pollutants under the Toxics Policy; and, as a last resort, compliance schedules in an enforcement order, such as an order meeting the criteria in Water Code section 13385(j)(3).

9. There is insufficient evidence in the record to determine whether REC-1 is a seasonal use of Old Alamo Creek; AGR likely is a seasonal use of Old Alamo Creek.

10. The Sources of Drinking Water Policy and the basin plan amendment implementing the policy are exempt from the APA's rulemaking requirements.

11. The Central Valley Regional Board designated Old Alamo Creek for MUN as an implementation of the Sources of Drinking Water Policy.

12. If the Central Valley Regional Board amends its Current Basin Plan to dedesignate MUN for Old Alamo Creek, the State Board will consider amending Resolution No. 88-63, concurrently with Board action on the basin plan amendment, to exempt Old Alamo Creek.

13. The Central Valley Regional Board properly required that the Easterly treatment plant effluent receive tertiary treatment in order to protect the REC-1 and AGR uses of Old Alamo Creek.

14. The Central Valley Regional Board must revise the Vacaville permit findings to expressly address the Water Code section 13241 factors, in addition to economic considerations, with respect to the tertiary treatment-related coliform and turbidity permit limits.

15. To ensure consistency with Water Code section 13360, the Central Valley Regional Board must define "tertiary treatment capabilities" and include in the definition other alternative treatment technologies that achieve the coliform and turbidity limits.

16. The Central Valley Regional Board did not violate the Clean Water Act or state law in requiring that Vacaville achieve tertiary treatment.

17. The Central Valley Regional Board appropriately implemented the federal mandatory bypass prohibition in the Vacaville permit.

18. The bypass prohibition does not violate Water Code section 13263(a) nor section 13360.

19. The receiving water ammonia limit is inappropriate.

20. The receiving water temperature limit is inappropriate because Old Alamo Creek, due to hydrologic modifications, does not have a "natural receiving water temperature."

21. The Central Valley Regional Board should impose appropriate temperature controls on the Easterly discharge after a site-specific study.

22. The Central Valley Regional Board properly imposed effluent limits for bromodichloromethane and dibromochloromethane.

23. The Central Valley Regional Board must reconsider the chloroform effluent limit because it is based on an EPA criteria guidance that EPA is reassessing.

24. The Central Valley Regional Board properly determined that dilution could not be allowed for the Easterly plant discharge because the record lacks data supporting dilution for Old Alamo Creek.

25. The Central Valley Regional Board properly imposed the nitrate limits in the Vacaville permit.

26. Neither the nitrate nor the lindane limits are invalid because they are based on objectives that prospectively incorporate-by-reference.

27. The Central Valley Regional Board must reconsider the daily maximum lindane and nitrate limits in light of 40 C.F.R. section 122.45(d)(2).

28. The Central Valley Regional Board must reconsider the need for an effluent limit for copper to implement the Delta copper objective.

29. Vacaville will qualify for interim performance-based copper limits when Vacaville complies with the Toxics Policy's provisions on developing a site-specific translator.

30. The Central Valley Regional Board must reconsider Groundwater Limitation E.1. If the Easterly treatment plant's operation has caused changes in groundwater quality for pollutants other than TDS and EC, the Central Valley Regional Board must give Vacaville an opportunity to demonstrate that the changes are consistent with Resolution No. 68-16.

31. Under federal and state law, the State and Regional Boards normally cannot consider costs or technical constraints in developing water quality-based effluent limits and imposing other mandatory federal conditions in NPDES permits.

32. The State and Regional Boards must ensure that NPDES permits meet the minimum federal requirements of the Clean Water Act and implementing regulations.

33. For priority pollutants, the Toxics Policy provides sufficient flexibility to the Regional Boards to appropriately regulate discharges to EDWs. The Toxics Policy, for example, allows compliance schedules in permits in appropriate cases, interim effluent limits for metals for

dischargers who comply with the site-specific translator study provisions, and case-by-case exceptions.

In reaching these conclusions, the Board has taken official notice[194] of the following documents:

1. 1975, 1990, and 1995 Basin Plans and the Bay-Delta Plan;

2. United States Department of Agriculture, Soil Conservation Service, Soil Survey of Solano County, California (1977);

3. Jenkins, D., Richard, M., Daigger, G., Manual on the Causes and Control of Activated Sludge Bulking and Foaming (prepared for the Water Research Commission and EPA) (1986);[195]

4. Metcalf and Eddy, Inc., Wastewater Engineering – Treatment, Disposal and Reuse, 3d ed., edited by G. Tchobanoglous and F. Burton (1991);[196]

5. Schroeder, E., Water and Wastewater Treatment (1977);[197]

6. Crites, R. and Tchobanoglous, G., Small and Decentralized Wastewater Management Systems (1998).[198]

V. STAY REQUEST

Vacaville and others have requested that the Board stay those provisions in Order No. 05-01-044 that the Board has determined are improper or that are likely to be changed. Vacaville has violated the receiving water temperature and ammonia limits in its permit. Vacaville represents that it has also violated the interim chloroform limits and the copper limits. Aside from these limits, Vacaville appears to be in compliance with its permit. As stated before,

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[194] The Board denies the request of Turlock and LACSD to take official notice of an order issued by a federal district court in *City of Los Angeles v. U.S. EPA* (C.D. Cal., Dec. 18, 2001), Case No. CV 00-08919 (RZx), on a summary judgment motion. The order addressed the legality of EPA action on a Los Angeles Regional Board basin plan amendment. The order is unpublished and is not binding on the Board. The Board has also determined that Vacaville's final comments, dated September 18, 2002, on a prior version of this order contain new evidence in Tables 1 and 2 and Figures 1 through 3. The Board excludes this new evidence because it is untimely.

[195] See page citations in fn. 193, *supra.*

[196] *Ibid.*

[197] *Ibid.*

[198] *Ibid.*

the Central Valley Regional Board generally included compliance schedules in the permit for effluent limitations implementing the COLD and MUN uses for Old Alamo Creek.

Nevertheless, the Board concludes that it is appropriate to stay the compliance schedules for limits based on COLD and MUN. The Board is persuaded to stay the schedules in this case for several reasons. The Board is most influenced by the numerous statements in the record reflecting the Central Valley Regional Board's own judgment that COLD and MUN are likely inappropriate uses for Old Alamo Creek. This judgment is supported by evidence in the record indicating that these uses do not exist and likely cannot be feasibly attained in the future. The evidence includes evidence introduced at both the Central Valley Regional Board permit hearing as well as this Board's hearing.

The Board will, therefore, stay the four limitations mentioned above, as well as Groundwater Limitation E.1, from the effective date of Order No. 05-01-044 until the Central Valley Regional Board acts on the remand. The Board will likewise stay the compliance schedules for final effluent limitations implementing the COLD and MUN uses for Old Alamo Creek for a 3-year period from the effective date of this order. The Board has selected 3 years because basin plan amendments, once adopted by the Regional Boards, require the approval of not only this Board but also OAL and EPA. In addition, the Board will stay the time schedule for final limits based on tertiary treatment until the Central Valley Regional Board acts on the remand. By staying these schedules, the Board intends that the schedules not run during the stay period. This means that the effective date of the relevant final limits will be delayed beyond their existing effective date by a period of time equal to the stay period.

The Board stresses that the Central Valley Regional Board must still ensure that water quality standards for waters downstream of Old Alamo Creek are met. Hence, on remand, the Central Valley Regional Board may determine that it is necessary to regulate pollutants, such as THMs and nitrates, to protect the existing Bay-Delta MUN use or to protect the COLD uses downstream.

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VI. ORDER

IT IS HEREBY ORDERED that Order No. 5-01-044 is remanded to the Central Valley Regional Board for review and revision consistent with the discussion and findings of this Order.

IT IS FURTHER ORDERED that the Central Valley Regional Board shall expeditiously initiate basin plan amendments to consider dedesignating COLD and MUN from Old Alamo Creek.

IT IS FURTHER ORDERED THAT the following provisions of Order No. 05-01-044 are stayed from the effective date of the permit until the Central Valley Regional Board acts on the remand:

(a) Effluent Limitations B.1 for copper

(b) Interim Effluent Limitations B.2 for chloroform

(c) Receiving Water Limitation D.8 for temperature

(d) Receiving Water Limitation D.14 for ammonia

(f) Groundwater Limitation E.1

IT IS FURTHER ORDERED THAT the compliance schedule to achieve final coliform, turbidity, and total suspended solids limits in Effluent Limitations B.1 fn. 5 and Provisions F.5 is stayed from the effective date of this order until the Central Valley Regional Board acts on the remand.

IT IS FURTHER ORDERED that the following provisions of Order No. 05-01-044 are stayed for a 3-year period from the effective date of this order:

(a) The compliance schedule for DO in Effluent Limitations B.1 fn. 5

(b) The compliance schedule for final DO receiving water limitations in Receiving Water Limitations D.1

(c) The compliance schedule for final BOD limitations in Effluent Limitations B.1 fn. 5 and Provision F.5

(d) The compliance schedule for final effluent limitations for bromodichloromethane, dibromochloromethane, and chloroform in Effluent Limitations B.1 fn. 6

IT IS FURTHER ORDERED that the Board shall retain jurisdiction over Order No. 5-01-044 until the basin planning process is concluded.

IT IS FURTHER ORDERED that the Central Valley Regional Board shall provide the State Board with a yearly report on the Central Valley Regional Board's progress in amending the Current Basin Plan as directed in this order.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on October 3, 2002.

AYE: Arthur G. Baggett, Jr.
Peter S. Silva
Richard Katz

NO: None

ABSENT: None

ABSTAIN: Gary M. Carlton

ORIGINAL SIGNED BY
Maureen Marché
Clerk to the Board